# Analyses of sigma factor-associated regulatory networks in *Pseudomonas aeruginosa*

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**Sebastian Schulz, Denitsa Eckweiler, Agata Bielecka, Tanja Nicolai, Susanne Häußler.** Impact of sigma factors on global regulation of gene expression in *Pseudomonas aeruginosa*. (Poster) ESF-EMBO Symposium Bacterial Networks, Pultusk (2013).

**Sebastian Schulz, Susanne Häußler.** Analyses of sigma factor-associated regulatory networks in *Pseudomonas aeruginosa*. (Poster) 5th International PhD Symposium, Braunschweig (2011).

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**Sebastian Schulz, Jörg Overhage, Susanne Häußler.** Analyses of sigma factor-associated regulatory networks in *Pseudomonas aeruginosa*. (Poster) 3rd International PhD Symposium, Braunschweig (2009).

# Abstract

A hallmark of living bacteria is their sophisticated ability to adapt to changing environments. Within this process, the regulation of gene transcription is of major importance and realized by the complex interplay of DNA sequences and regulators. In bacteria, sigma factors provide promoter recognition specificity to the RNA polymerase and thus are the pivotal point in mediating an adequate internal response to external cues.

The aim of this thesis was to uncover the regulatory networks of the 10 major alternative sigma factors AlgU, FliA, RpoH, RpoN, RpoS, PvdS, SigX, FpvI, FecI and FecI2 in the opportunistic pathogen *Pseudomonas aeruginosa*. The cognate sigma factor regulons were determined by RNA-sequencing of sigma factor deletion mutant and hyper-expressing strains. A hierarchical cluster analysis of the 10 regulons revealed a modular organization of global gene expression with 2/3 of the genes being under the exclusive direction of one specific sigma factor, whereas 1/3 of the genes were under control of 2 or more sigma factors. To define the primary regulon of each sigma factor, transcriptional profiling was complemented with chromatin immuno-precipitation coupled to high-throughput sequencing as well as motif scans of *de novo* elucidated sigma factor binding motifs. Functional profiling of these primary regulons was in high accordance with known sigma factor functions. Furthermore, the functional analyses of the sigma factor cross talk revealed an enrichment of genes which are linked to fundamental cellular processes within the indirect cross talk, while genes which were directly targeted by 2 or more sigma factors were mainly involved in processes associated with adaptation. Moreover, RpoN was identified to be the major player within the sigma factor cross talk.

To elucidate the connectivity of the regulons in the face of changing environments, the functional state of the sigma factor-associated regulatory networks was investigated under 14 different growth conditions. This analysis demonstrated the robustness of these networks. Moreover, the transcriptome analysis of 6 *P. aeruginosa* mutant strains with inactivated transcriptional regulators (Anr, CbrB, FleQ, GacA, LasR and RhlR) revealed specific and selective interconnectivity of alternative sigma factor regulons by transcription factors to cope with complex and challenging environments.

This thesis significantly advances our understanding of how bacteria are able to adapt to changing environments. This adaptability is mainly based on robust and distinct modules provided by sigma factor regulons and the fine-tuned modulation of transcription provided by the flexible connection of these modules by transcription factors.

# Zusammenfassung

Ein Schlüsselmerkmal lebender Bakterien ist ihre herausragende Anpassungsfähigkeit an sich ändernde Umweltbedingungen. Dabei spielt die Regulation der Transkription von Genen eine entscheidende Rolle, welche durch ein komplexes Zusammenspiel von DNS-Sequenzen und Regulatoren bestimmt wird. In Bakterien vermitteln Sigma-Faktoren die sequenzspezifische Erkennung von Promotoren durch die RNS-Polymerase und nehmen damit eine Schlüsselfunktion bei der internen Umsetzung einer adäquaten Signalantwort ein.

Das Ziel dieser Arbeit war es, die regulatorischen Netzwerke der 10 alternativen Sigma-Faktoren AlgU, FliA, RpoH, RpoN, RpoS, PvdS, SigX, FpvI, FecI und FecI2 im opportunistischen Krankheitserreger *Pseudomonas aeruginosa* zu entschlüsseln. Zu diesem Zweck wurden die Sigma-Faktor Regulons durch RNA-Sequenzierung von Stämmen mit Sigma-Faktor Deletion und Überexpression bestimmt. Ein hierarchisches Clustern der 10 Regulons ergab eine modulare Organisation der globalen Genexpression, bei der 2/3 der Gene ausschließlich von einem bestimmten Sigma-Faktor reguliert wurden, während 1/3 der Gene unter der Kontrolle von 2 oder mehr Sigma-Faktoren standen. Zur Bestimmung der primären Sigma-Faktor Regulons wurden die Transkriptomanalysen mit Chromatin-Immunopräzipitation gekoppelt mit Hochdurchsatz-Sequenzierung sowie mit Motivsuchen der Sigma-Faktor Bindungsmotive ergänzt. Die funktionelle Charakterisierung der primären Regulons ergab eine hohe Übereinstimmung mit den bekannten Funktionen der Sigma-Faktoren. Desweiteren zeigte die funktionelle Analyse eine Anreicherung von Genen mit grundlegenden Zellfunktionen in der indirekten Wechselwirkung der Sigma-Faktoren, während Gene, die direkt von 2 oder mehr Sigma-Faktoren reguliert wurden, verstärkt an Anpassungsprozessen beteiligt waren. Zudem wurde RpoN als der dominante Sigma-Faktor identifiziert.

Um die Verknüpfung der Regulons bei Umgebungsveränderungen aufzuklären, wurde das Netzwerkverhalten unter 14 unterschiedlichen Umweltbedingungen untersucht. Diese Analyse ergab eine hohe Robustheit der Netzwerke. Weiterhin zeigten Transkriptomanalysen von 6 *P. aeruginosa* Mutantenstämme mit inaktivierten Transkriptionsfaktoren (Anr, CbrB, FleQ, GacA, LasR und RhlR) spezifische und selektive Verknüpfungen der alternativen Sigma-Faktor Regulons durch Transkriptionsfaktoren als Antwort auf komplexe Umweltbedingungen.

Die vorliegende Arbeit trägt somit wesentlich zum Verständnis bei, wie Bakterien sich an ihre Umwelt anpassen können. Diese Anpassungsfähigkeit basiert hauptsächlich auf robusten und distinkten Modulen durch Sigma-Faktor Regulons sowie der präzisen Modulation der Transkription durch die flexible Vernetzung dieser Module durch Transkriptionsfaktoren.

Diese Arbeit widme ich meinen geliebten Eltern sowie all denen, deren Unterstützung zum Gelingen dieser Arbeit beigetragen hat.

‘The only way to truly know is to find out for yourself.’

Robert A. Monroe

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# Table of Contents

# List of Abbreviations

| | |
|---|---|
| ATP | adenosine triphosphate |
| *B. subtilis* | *Bacillus subtilis* |
| BM2 | basal medium 2 |
| bp | base pair(s) |
| cAMP | cyclic adenosine monophosphate |
| cDNA | complementary deoxyribonucleic acid |
| ChIP | chromatin immunoprecipitation |
| ChIP-chip | chromatin immunoprecipitation coupled to DNA microarray |
| ChIP-seq | chromatin immunoprecipitation coupled to high-throughput sequencing |
| DNA | deoxyribonucleic acid |
| DNS | Desoxyribonukleinsäure |
| ECF | extracytoplasmic function |
| *E. coli* | *Escherichia coli* |
| E value | expectation value |
| EDTA | ethylenediaminetetraacetic acid |
| EF | enrichment factor |
| Fig. | Figure |
| FLP | flippase |
| FW | forward |
| *G. sulfurreducens* | *Geobacter sulfurreducens* |
| IP | immunoprecipitation |
| LB | lysogeny broth |
| LinDA | linear DNA amplification |
| LPS | lipopolysaccharides |
| MCS | multiple cloning site |
| mRNA | messenger ribonucleic acid |
| NaCl | sodium chloride |
| nRPKs | normalized reads per kilobase of gene sequence |
| OD | optical density |
| $OD_{600}$ | optical density at the wavelength of 600 nm |
| ORF | open reading frame |
| *P. aeruginosa* | *Pseudomonas aeruginosa* |
| *P. putida* | *Pseudomonas putida* |
| PBS | phosphate-buffered saline |

| | |
|---|---|
| PCR | polymerase chain reaction |
| ppGpp | guanosine 5'-diphosphate 3'-diphosphate |
| PseudoCAP | *Pseudomonas aeruginosa* Community Annotation Project |
| P value | probability value |
| RBS | ribosomal binding site |
| RLU | relative light units |
| RNA | ribonucleic acid |
| RNA-seq | RNA-sequencing |
| RNS | Ribonukleinsäure |
| RPG | reads per gene |
| rRNA | ribosomal ribonucleic acid |
| rpm | round per minute |
| RV | reverse |
| SDS | sodium dodecyl sulfate |
| sRNA | small ribonucleic acid |
| Tab. | Table |
| TBS | Tris-buffered saline |
| Tn | transposon |
| Tris-HCl | tris(hydroxymethyl)aminomethane-hydrogen chloride |
| TU | transcriptional unit |
| tRNA | transfer ribonucleic acid |
| vs. | versus |
| WT | wild-type |

Units as well as nucleotides and amino acids are abbreviated according to the International System of Units (SI) and the International Union of Pure and Applied Chemistry (IUPAC) nucleotide/amino acid code.

# List of Figures

# List of Tables

# 1 Introduction

## 1.1 *Pseudomonas aeruginosa* – a highly versatile model organism

The motile Gram-negative γ-proteobacterium *Pseudomonas aeruginosa* is the most prominent and best-studied member of the genus *Pseudomonas* (*1*). One of the remarkable features of *P. aeruginosa* is its capability to colonize a wide variety of niches from diverse marine to terrestrial habitats due to its large metabolic capacity (*2-4*). More importantly, *P. aeruginosa* is an opportunistic pathogen with a broad host range from amoeba to humans (*5, 6*) and can cause acute and chronic infections particularly in immunocompromized and cystic fibrosis patients (*7-9*). *P. aeruginosa* is also well-known for its high level of antibiotic resistance towards a broad spectrum of antimicrobial drugs (*10*) and thus is a serious threat for individual and public health (*11, 12*). Additionally, *P. aeruginosa* is able to form biofilm and to undergo phenotypic diversification to small colony variants or conversion to mucoidy which further complicate antibiotic therapies (*13-15*). In 2001, the complete sequence of the *P. aeruginosa* strain PAO1 genome was published (*16*). Subsequent analyses revealed a large genome of 6.3 million base pairs with the extraordinary complexity of 5570 predicted open reading frames (ORFs). 3021 ORFs could be functionally annotated and revealed strikingly high proportions of transcriptional regulators (7.2%) and two-component regulatory systems (2.1%). These regulators have been hypothesized to provide the regulatory framework for the remarkable environmental adaptability of *P. aeruginosa*. Genome sequencing of the highly virulent *P. aeruginosa* strain PA14 revealed 478 genes which are absent in the *P. aeruginosa* strain PAO1. However, virulence could not be correlated to these strain-specific genes underlining both the importance and complex nature of gene regulation in *P. aeruginosa* (*17*).

## 1.2 Regulation of gene expression in bacteria – the key to adaptation and survival

The regulation of gene expression is mandatory for both house-keeping processes and adequate stress responses to changing environmental conditions. In bacteria, these two fundamental aspects of life have to be continuously conciliated in a single cell (*18*). Basically, regulation of gene expression is the process that guarantees the correct amounts of the right gene products at the appropriate time under the given conditions (*19*). Moreover, this process must balance the need for complex regulation and energy costs. In a simplified view it is a cascade of the following subsystems: Signal-Regulator-Gene-Transcript-Protein-Metabolite (*20*) (Fig. 1.1). Every step offers the possibility to fine-tune gene expression. However, for reasons of economy, transcription initiation is the key step within this regulatory cascade (*19*).

### 1.2.1 Signal transduction systems

Bacteria continuously integrate highly diverse internal and external signals. The major internal determinate of the bacterium is the growth rate and numerous studies confirmed that the transcriptional machinery is growth phase-dependent (*21*, *22*). This finding is particularly apparent for the sigma factors RpoD and RpoS (*23*, *24*), but also includes the alternative sigma factors FliA (*25*) and RpoH (*26*). In bacteria, external conditions are mainly monitored by three signal transduction systems. One-component systems are widely-spread, highly diverse and the most abundant and simplest signal transduction systems. They are basically single polypeptide chains which harbor a sensory input and effector output domain (*27*). In two-component systems these domains were encoded by two different protein and signal transduction involves the phosphotransfer form the sensor kinase to the corresponding response regulator (*28*). This modular design offers bacteria the possibility to directly sense extracellular changes and to integrate signal transduction into further regulatory circuits (*27*). Recently, the group of extracytoplasmic function (ECF) sigma factors was identified to constitute the third signal transduction system in bacteria (*29*). ECF sigma factors are sequestered by anti-sigma factors to the inner membrane and are activated in response to specific stimuli. This leads to the regulated proteolysis of the anti-sigma factor and thus the release of the active ECF sigma factor (*30*, *31*). Regardless of the kind of signal transduction system, the final output is the transcriptional regulation of gene expression to cope with the external conditions encountered.

### 1.2.2 Regulators

There are three major classes of regulators in bacteria: sigma factors, transcription factors and regulatory RNAs. Sigma factors are dissociable subunits of the RNA polymerase holoenzyme ($\alpha_2\beta\beta'\omega\sigma$) which confer promoter recognition specificity to the RNA polymerase core enzyme ($\alpha_2\beta\beta'\omega$) and thus are essential for transcription initiation (*32-34*). While the primary sigma factor (RpoD in Gram-negative bacteria and SigA in Gram-positive bacteria) directs the largest part of global gene expression under standard conditions, alternative sigma factors regulate simultaneously the expression of specific subsets of genes (‘regulons’) under specific growth and stress conditions (*35*). The regulation among sigma factors is postulated to be dependent on their active concentrations and affinities to the limited amount of the core RNA polymerase

(*36*) (for further information on sigma factors see section 1.3). Transcription factors are proteins which are composed of a DNA-binding domain with a helix-turn-helix motif and a sensor domain for binding activating ligands or post-translational modifications (*37, 38*). In general, they work as multimeric complexes and can be grouped in four classes according to their contact with the RNA polymerase holoenzyme (*18*). An evolutionary study in *Escherichia coli* revealed that transcription factors can be classified into 20 families of related proteins and act as activators (35%), repressors (43%) or show dual regulation (22%) (*39*). Importantly, it was shown that seven global transcription factors modulate the expression of 51% of the genome and about one-fifth of transcriptions factors target less than three genes (*37*). The same study demonstrated that 49% of all genes in *E. coli* are affected by multiple transcription factors indicating co-regulation by global and highly specialized local transcription factors. In combination these regulatory mechanisms provide the basis for complex promoter architecture leading to highly attuned recruitment of the RNA polymerase on a global scale and thus optimal promoter output. In contrast to sigma and transcription factors, regulatory RNAs are able to modulate gene expression at all stages (*40, 41*). For instance, 6S RNA reprograms transcription by binding to the principal sigma factor RpoD (*42, 43*). However, the major impact of regulatory RNAs concerns post-transcriptional processes and they modulate gene expression by base-paring with mRNA or binding to proteins (*44*).

### 1.2.3 Genome structure

The genomic strategy of gene regulation is determined by its core and flexible gene pool (*45-47*), its organization in operational units (*48, 49*) and their genome-wide arrangement (*50*) as well as its accessibility to transcription which is mainly impacted by diverse nucleoid-associated proteins (*51-53*), DNA supercoiling by topoisomerases (*54-56*) and DNA methylation by sequence and species-specific DNA methyltransferases (*57-61*).

### 1.2.4 Transcript processing

Once transcription has been initiated, the next regulatory mechanisms exploit the structural features of the nascent mRNA. Transcription attenuation is an ancient strategy and relies on the ability of RNA to form secondary structures in particular so-called hairpin structures which stall the RNA polymerase in the 5’-untranslated region (*62, 63*). The stability of this premature terminator structure is sensitive to metabolite concentrations such as amino acids (*64*), tRNA charging (*65*) and temperature (*66, 67*) allowing bacteria to adjust gene expression. The most prominent examples involve the bacterial ribosome and are coined riboswitch (*68*). Another level of RNA-based gene regulation includes naturally occurring antisense RNA (*69*). The major mode of action is post-transcriptional gene silencing based on the duplex formation of the sense and antisense RNA. However, transcriptional interference by the collision of divergently elongating RNA polymerase complexes can also lead to premature transcription termination (*70*). Recently, a study in *E. coli* revealed the expression of more than 1000 antisense RNA highlighting the importance of this underestimated regulatory mechanism (*71*). Another strategy for bacteria to regulate gene expression is to take advantage of the degeneracy of the genetic code. Early in molecular biology, the codon usage in bacteria was positively correlated with gene expressivity (*72*). However, a subsequent study revealed that this optimization is reduced in the translational start region (*73*) and recent publications suggest that the codon usage is not the primary determinant, but rather reflects the selection pressure for reduced mRNA folding to improve translation efficiency (*74, 75*).

### 1.2.5 Protein modification and stability

Upon translation, gene expression products are mainly regulated by modifications and proteolysis. The impact of post-translational modifications of proteins in bacteria has recently gained greater attention (*76*) and encompasses for instance signal transduction systems via phosphorylation (*28*), chemotaxis systems via methylation (*77*), the carbon flux through the central metabolism via acetylation (*78*) and protein secretion via lipidation (*79, 80*). Regulated proteolysis in bacteria is a powerful tool for both protein activation and degradation (*81, 82*). This mechanism has been shown to be crucial for the ECF sigma factor-depending signal transduction (*83*) as well as for the activation and degradation of the cytoplasmatic sigma factor-protein complexes such as FliA-FlgM (*25, 84*) and RpoH-DnaJ-DnaK-GrpE (*85-87*).

### 1.2.6 Metabolites

Metabolites mark the end of the regulatory cascade. However, they serve as co-factors of virtually every previous described mechanism and thus provide crucial feed-back loops within the overall regulatory circuit (*88*). Carbon catabolite repression is the classical mechanism how bacteria optimally adapted to their environment and was first described by Jacques Monod in 1942. In this process, the intracellular level of the metabolite cyclic adenosine monophosphate (cAMP) plays a central role within the carbon and energy metabolism. cAMP is upon binding to its receptor protein a major transcriptional activator of the expression of catabolic genes of the preferred carbon source (*89, 90*). However, recent studies provide evidence that carbon catabolite repression can be realized by diverse regulatory mechanisms which differ among bacteria (*91*) and particularly in the genus *Pseudomonas* (*92, 93*). In addition to its regulation of alternative sugar metabolism, cAMP has been shown to impact motility (*94, 95*) and virulence (*96-98*). Together with cyclic di-GMP which was identified as a key player in the transition from the motile to the sessile life style (*99*), cAMP is the most prominent member of the important group of second messengers (*100*). Another small metabolite with a great impact is the alarmone guanosine 5'-diphosphate 3'-diphosphate (ppGpp) which is synthesized and accumulated under amino acid starvation conditions. In a process termed stringent response ppGpp targets in concert with the transcription factor DskA the RNA polymerase to switch gene expression from rRNA and tRNA genes to general stress response genes (*101*). Recent studies have demonstrated that the impact of ppGpp is larger than anticipated. ppGpp controls virtually the complete macromolecule synthesis and the intermediary metabolism (*102*) and targets proteins which are assigned to various pathways (*103*). Finally, small homoserine lactone-based molecules have been identified to be integral part of the intercellular communication of cell population in many bacterial species (*104*). These metabolites accumulate with increasing cell density and upon a threshold concentration activate in concert with its cognate transcriptional regulator the expression of a broad and complex set of genes (*105*).

## 1.3 Sigma factors – global regulators of bacterial gene expression

In 1969, the first sigma factor was identified as a dissociable subunit of the RNA polymerase core enzyme ($\alpha_2\beta\beta'\omega$) which is mandatory to stimulate transcription initiation (*32*). In the same year, the cyclic re-use of the sigma factor was demonstrated (*106*). Further milestones followed with the identification of RpoH as the first alternative sigma factor (*107*) and SigE as the first member of a novel subgroup of alternative sigma factors termed ECF sigma factors (*108*). These sigma factors regulate simultaneously specific subsets of genes in response to environmental conditions and their role was promptly linked to bacterial virulence and pathogenesis (*15, 109, 110*). Moreover, ECF sigma factors have been shown to be integral part of signal transduction in bacteria (*29*). Sequence analysis of sigma factors revealed two distinct sigma families which are represented by $\sigma^{70}$ (RpoD or SigA) and $\sigma^{54}$ (RpoN) (*111*). The $\sigma^{70}$ family was further divided into four phylogenetic groups (*112*). Group 1 is represented by the primary sigma factor RpoD or SigA, while group 2 sigma factors are closely related to the primary sigma factor, but not essential for bacterial growth. Group 3 includes sigma factors which are less closely related and are activated due to specific internal or external signals, while group 4 consists of the numerous and highly diverged ECF sigma factors. Sequence alignments of sigma factors uncovered four conserved region. Region 2 and 4 are strongly conserved and are involved in DNA binding, while region 1 was only present in group 1 and 2 sigma factors and region 3 was virtually absent in ECF sigma factors (*111*). Structural analysis of an RNA polymerase holoenzyme-DNA complex confirmed interaction of the -10 element (Pribnow box) with region 2.4 and the -35 element with region 4.2 by helix-turn-helix motifs (*113, 114*). Furthermore, conserved aromatic residues of region 2.3 facilitate promoter melting and thus isomerization from the closed to the transcription-competent open promoter complex. Upon transcription initiation and promoter escape the sigma factor is released in a stochastic manner before re-entering the next round of transcription (*115, 116*). The $\sigma^{54}$ family which is represented by RpoN is separated from the $\sigma^{70}$ family due to many unique properties. In contrast to the $\sigma^{70}$ family, RpoN scans for conserved GG and GC elements located -24 and -12 nucleotides upstream from the transcriptional start site (*117*). RpoN-mediated transcription initiation requires ATP hydrolysis as well as interaction with specific activators (*118-121*). The activity of sigma factors and in particular of ECF sigma factors is preferentially controlled at the post-translational level by anti-sigma factors which inactivate sigma factor by sequestering (*122*). Specific internal or external signal as well as anti-anti sigma factors can counteract anti-sigma factor activity leading to the release and re-activation of sigma factors (*123, 124*). The number of sigma factor genes in bacterial species ranges from one gene in *Mycoplasma genitalium* (*125*) over seven genes in *E. coli* (*126*) and *Corynebacterium glutanicum* (*127*) to 63 genes in *Streptomyces coelicolor* (*128*). According to recent data, the genome of *P. aeruginosa* strain PA14 encodes 26 sigma factor genes (Fig. 1.2). In 2008, 25 of these 26 sigma factors were reviewed (*35*) and complemented by the sigma factor VreI one year later (*129*). In the past, the functions of major sigma factors were intensively investigated. While RpoD directs house-keeping processes (*130*), AlgU has been shown to govern the envelope stress response including alginate synthesis (*131-134*). FliA was identified to be mainly involved in the regulation of motility and chemotaxis (*135-138*), while RpoH orchestrates the heat-shock response (*107, 139, 140*). RpoN has been demonstrated to be the major regulator of nitrogen acquisition (*141*), motility and attachment (*142, 143*) and RpoS was linked to the quorum-sensing circuit (*144*). The ECF sigma factors PvdS (*145*), FpvI (*146*) and FecI (*147*) were linked to iron-acquisition under iron-limited conditions and recently the impact of SigX on cell membrane composition and secretion was demonstrated (*148, 149*).

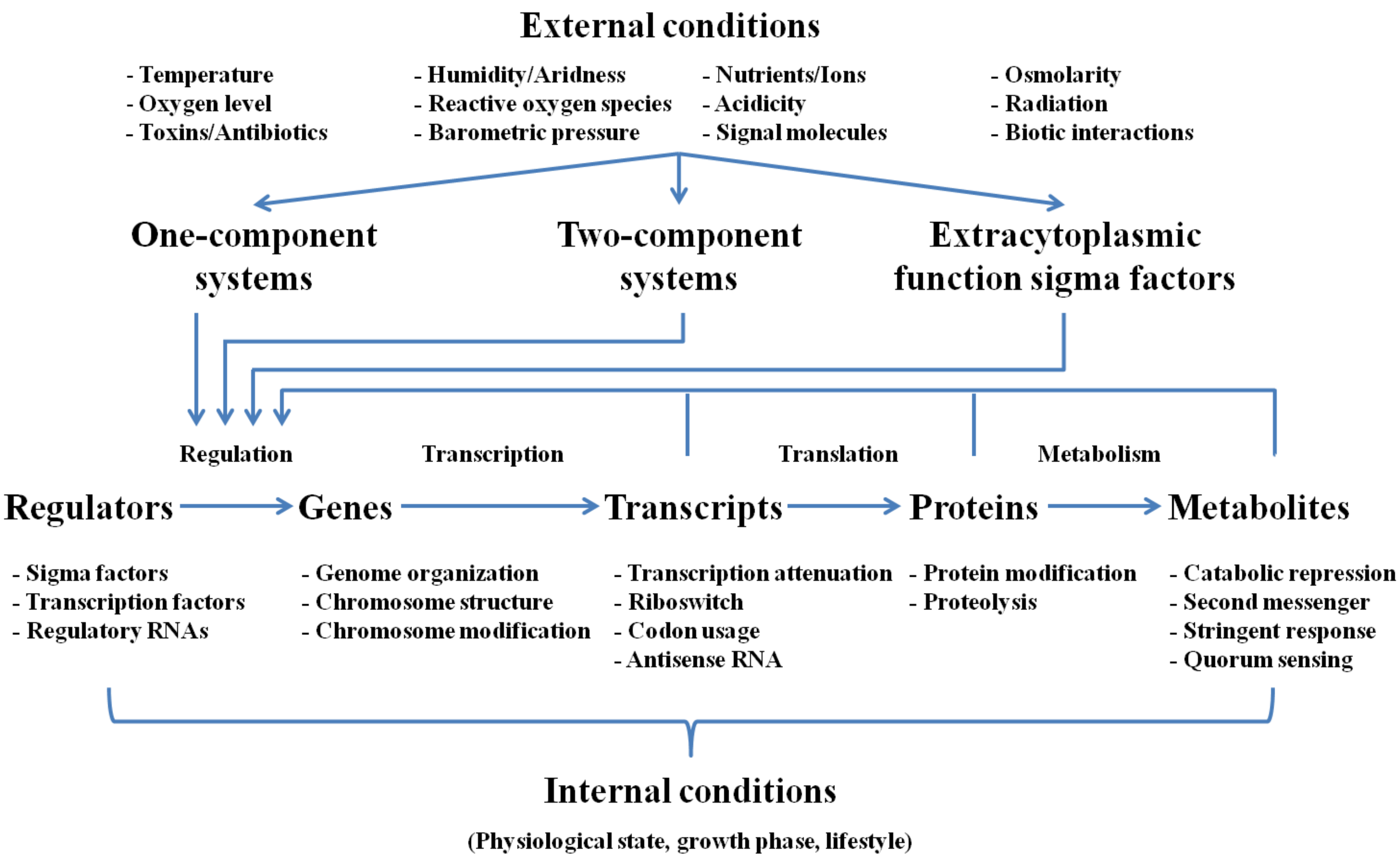



**Fig. 1.1: General map to regulation of gene expression in bacteria.**
Bacteria mainly sense highly diverse and complex environmental conditions via three major signaling systems. Input signals are integrated into the flow of genetic information to maintain cell homeostasis and/or proliferation. Within the global regulatory circuit each step is a check point to balance and fine-tune specific as well as overall gene expression according to the continuously changing environment. See text for details.

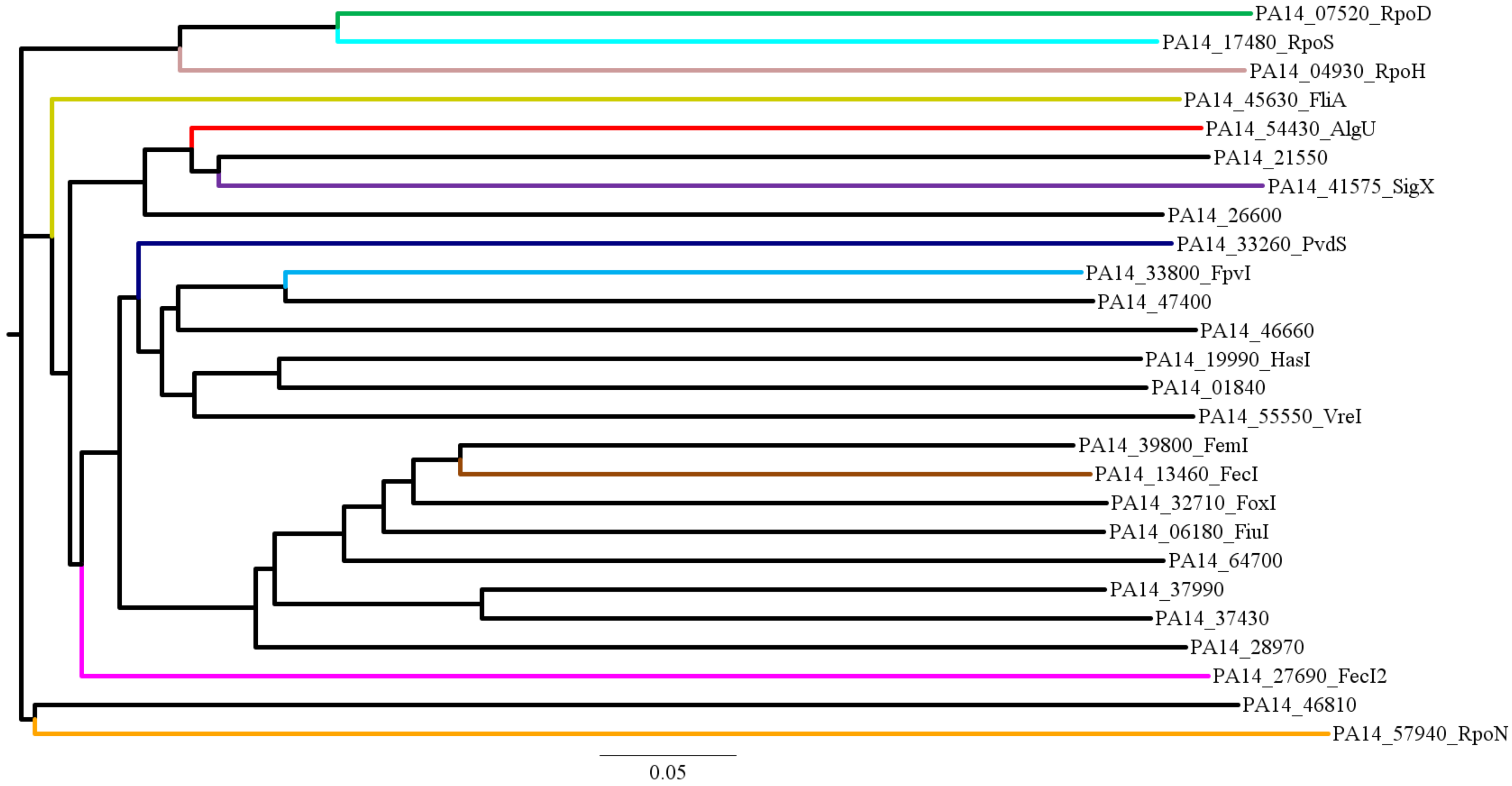



**Fig. 1.2: Phylogram of the 26 sigma factors in the *P. aeruginosa* reference strain PA14.**
Sigma factors were phylogenetically analyzed using ClustalW2 (*150*) with default settings. The clades of the sigma factors which are further investigated in this thesis are colored using FigTree (*151*). There is an apparent correlation of the linear amino acid sequence and the function of sigma factors. While the clade of the sigma factors RpoN and PA14_46810 is strikingly distinct from the clade of the $\sigma^{70}$ family sigma factors, the primary sigma factor RpoD and the primary-like sigma factor RpoS share a clade and the majority of ECF sigma factors spans a broad branch including the cytoplasmic sigma factor FliA.

## 1.4 Aim and design of the study

The large capability of bacteria in general and of *P. aeruginosa* in particular to adapt to highly diverse, extremely challenging and continuously changing environmental conditions has been linked to complex regulation of gene expression (*16*). Sigma factors are master regulators of bacterial transcription initiation at the core interface of DNA and RNA polymerase and the impact of individual sigma factors on gene expression has been intensively studied (*148, 152-155*). More recently, studies have attempted to exploit global profiling technologies to unravel global regulatory networks in many species (*156-158*). However, it is still a mystery of how bacteria exactly achieve and evolved their sophisticated capacity of adaptation.

The aim of this study was to elucidate the sigma factor-associated regulatory networks of the ten major alternative sigma factors AlgU, FliA, RpoH, RpoN, RpoS, PvdS, SigX, FpvI, FecI and FecI2 in the opportunistic pathogen *P. aeruginosa* in a comprehensive way to advance our understanding of bacterial adaptation and life by application and integration of global and cutting-edge technologies.

More specific aims were as follows:

1.) Identification and characterization of the operational state of sigma factor-associated networks (modularity and functionality of the networks).
2.) In-depths analysis of the cross talk within the sigma factor-associated networks.
3.) Elucidation of the functional state of the sigma factor-associated networks in the face of different environmental conditions (robustness of the networks).
4.) Analysis of the connectivity of sigma factor-associated networks by global transcriptional regulators (flexibility of the networks).

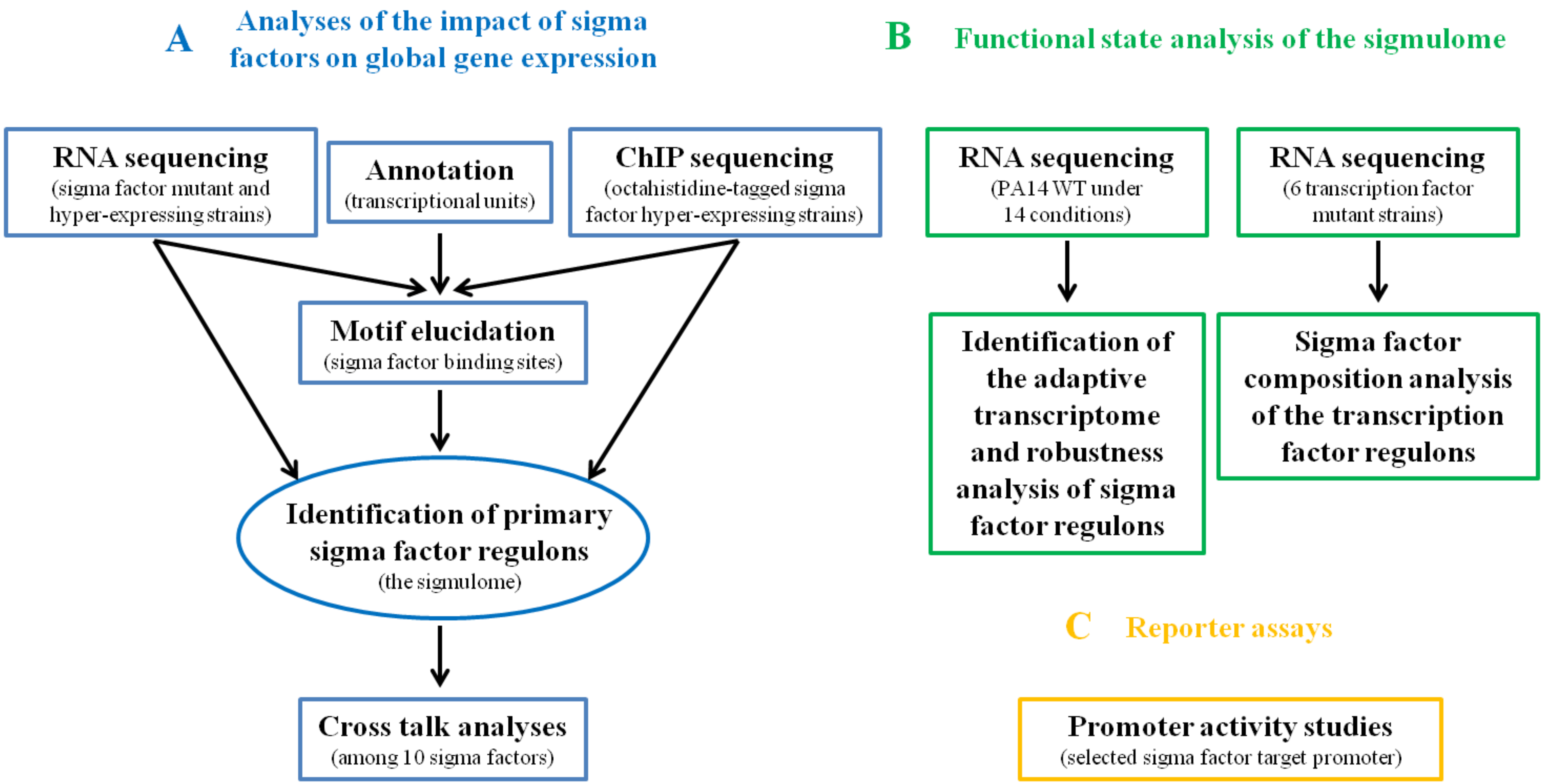



**Fig. 1.3: Conceptual design of the study.**
**(A)** Central aim was the identification of the primary sigma factor regulons (sigmulome) including the sigma factor cross talk. **(B)** The functional state of the sigmulome in response to diverse stress conditions and the connection of sigma factor and transcription factor regulons were investigated. **(C)** Sigma factor-dependent promoter activity studies in luminescence-based reporter strains were conducted to independently verify results and to provide a powerful tool for future sigma factor-activating stimuli screens.

# 2 Material and Methods

## 2.1 Material

### 2.1.1 Oligonucleotides

**Tab. 2.1: Oligonucleotides used in this study.**
Restriction enzymes used for cloning strategies are indicated in parenthesis and corresponding recognition sequences are underlined. Oligonucleotides were designed using primer3 (*159*) and purchased from Eurofins MWG Operon.

| Primer | Sequence (5'→3') | Function |
|---|---|---|
| *algU*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGCTAACCCAGGAACAGGATCA | RNA-and ChIP-seq experiments |
| *algU*-RV (XbaI) | ACTGTCTAGATCAGGCTTCTCGCAACAAAGG | RNA-seq experiments |
| *algU*-his8-RV (XbaI) | ACTGTCTAGATCAGTGGTGGTGGTGGTGGTGGTGGTGCTCCAGGGCTTCTCGCAACAAAGGCT | 8xHis-tagging for ChIP-seq experiments |
| *fecI*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGTCGAGCGCCGACCTCG | RNA-and ChIP-seq experiments |
| *fecI*-RV (XbaI) | ACTGTCTAGACTATCATGGCAGCTCGGCGAAGTA | RNA-seq experiments |
| *fecI*-his8-RV (XbaI) | ACTGTCTAGACTATCAGTGGTGGTGGTGGTGGTGGTGGTGCTCCAGTGGCAGCTCGGCGAAGTAGCA | 8xHis-tagging for ChIP-seq experiments |
| *fecI2*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGGATCGTCCGAATCAGCC | RNA-and ChIP-seq experiments |
| *fecI2*-RV (XbaI) | ACTGTCTAGACTATCAGGAATGAACGCGGCTG | RNA-seq experiments |
| *fecI2*-his8-RV (XbaI) | ACTGTCTAGACTATCAGTGGTGATGGTGGTGATGGTGGTGCTCCAGGGAATGAACGCGGCTGC | 8xHis-tagging for ChIP-seq experiments |
| *fliA*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGACAGCGGCCTCTGGAGTGCG | RNA-and ChIP-seq experiments |
| *fliA*-RV (XbaI) | ACTGTCTAGATCAGGCCGACCGCCAATCG | RNA-seq experiments |
| *fliA*-his8-RV (XbaI) | ACTGTCTAGATCAGTGGTGGTGGTGGTGGTGGTGGTGCTCCAGGGCCGACCGCCAATCGGC | 8xHis-tagging for ChIP-seq experiments |
| *fpvI*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGGAAAACCATTATCGGGAGCTG | RNA-and ChIP-seq experiments |
| *fpvI*-RV (XbaI) | ACTGTCTAGACTATCAGTCGGCTTCCCATTCGC | RNA-seq experiments |
| *fpvI*-his8-RV (XbaI) | ACTGTCTAGATCAGTGGTGGTGGTGGTGGTGGTGGTGCTCCAGGTCGGCTTCCCATTCGCG | 8xHis-tagging for ChIP-seq experiments |
| *pvdS*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGTCGGAACAACTGTCTACCCGCAG | RNA-and ChIP-seq experiments |

| | | |
|---|---|---|
| *pvdS*-RV (XbaI) | ACTGTCTAGATCAGCGACGGGCGCTGAGA | RNA-seq experiments |
| *pvdS*-his8-RV (XbaI) | ACTGTCTAGATCAGTGGTGGTGGTGGTGGTGGTGGTGCTCCAGGCGACGGGCGCTGAGATG | 8xHis-tagging for ChIP-seq experiments |
| *rpoD*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGTCCGGAAAAGCGCAACA | RNA-and ChIP-seq experiments |
| *rpoD*-RV (XbaI) | ACTGTCTAGACTATCACTCGTCGAGGAAGGAGCG | RNA-seq experiments |
| *rpoD*-his8-RV (XbaI) | ACTGTCTAGATCAGTGGTGGTGGTGGTGGTGGTGGTGCTCCAGCTCGTCGAGGAAGGAGCGC A | 8xHis-tagging for ChIP-seq experiments |
| *rpoH*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGACCACTTCTTTGCAACCTGTACAT | RNA-and ChIP-seq experiments |
| *rpoH*-RV (XbaI) | ACTGTCTAGATCAGGCGAGAATCCGCCCT | RNA-seq experiments |
| *rpoH*-his8-RV (XbaI) | ACTGTCTAGATCAGTGGTGGTGGTGGTGGTGGTGGTGCTCCAGGGCGAGAATCCGCCCTTT | 8xHis-tagging for ChIP-seq experiments |
| *rpoN*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGAAACCATCGCTAGTCCTCAAGA | RNA-and ChIP-seq experiments |
| *rpoN*-RV (XbaI) | ACTGTCTAGATCACACCAGTCGCTTGCG | RNA-seq experiments |
| *rpoN*-his8-RV (XbaI) | ACTGTCTAGATCAGTGGTGGTGGTGGTGGTGGTGGTGCTCCAGCACCAGTCGCTTGCGCTC | 8xHis-tagging for ChIP-seq experiments |
| *rpoS*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGGCACTCAAAAAAGAAGGGC | RNA-and ChIP-seq experiments |
| *rpoS*-RV (XbaI) | ACTGTCTAGACTATCACTGGAACAGCGCGTCA | RNA-seq experiments |
| *rpoS*-his8-RV (XbaI) | ACTGTCTAGACTATCAGTGGTGATGGTGGTGATGGTGGTGCTCCAGCTGGAACAGCGCGTCA CTC | 8xHis-tagging for ChIP-seq experiments |
| *sigX*-FW (EcoRI) | ACTGGAATTCTTAACTTTAAGGAGGAGATATAATGAATAAGCCTCACCCCCTGTC | RNA-and ChIP-seq experiments |
| *sigX*-RV (XbaI) | ACTGTCTAGATCATGTTTCGGTCGCATCTGAAAACT | RNA-seq experiments |
| *sigX*-his8-RV (XbaI) | ACTGTCTAGATCAGTGGTGGTGGTGGTGGTGGTGGTGCTCCAGTGTTTCGGTCGCATCTGAA AACT | 8xHis-tagging for ChIP-seq experiments |
| T7-promoter-BpmI-$(dA)_{15}$ (BpmI) | CGAAATTAATACGACTCACTATAGGGCTGGAGAAAAAAAAAAAAAAA | ChIP-seq experiments |
| T7-promoter-BpmI-$(dA)_{18}$ (BpmI) | CGAAATTAATACGACTCACTATAGGGCTGGAGAAAAAAAAAAAAAAAAAA | ChIP-seq experiments |
| iPCRpEX18AP-CW (EcoRV) | ATCGGATATCGCTAGCGCGGCCGCACGCGTGGTACCGGATCCGAATTCGCCAGCTGCATTAA TGAATCGG | inverse PCR to construct pEX18Ap2 |
| iPCRpEX18AP-ACW (EcoRV) | ATCGGATATCCTCGAGCTGCAGCCCGGGTCTAGAGAGCTCAAGCTTTCAAATATGCGCCTGA TGCG | inverse PCR to construct pEX18Ap2 |
| Mut-*algU*-up-FW (BamHI) | ATCGGGATCCGAAGGGTCAAGGCCAGACTCAG | mutagenesis |
| Mut-*algU*-up-RV (KpnI) | CAGTCAGTCAGGTACCGAAAGCTCCTCTTCGAACCTGGAG | mutagenesis |
| Mut-*algU*-down-FW (KpnI) | GGTACCTGACTGACTGACACAGCGGCAAATGCCAAG | mutagenesis |
| Mut-*algU*-down-RV (NotI) | ATCGGCGGCCGCGTATCGCTGGACGAGGAGTTGG | mutagenesis |
| Mut-*fecI*-up-FW (BamHI) | ACTGGAATTCCGGCAGGCGTACCGACGTG | mutagenesis |
| Mut-*fecI*-up-RV (KpnI) | TCAGTCAGTCAGGTACCCTGGACATTCCCGGAGCAGAAGG | mutagenesis |
| Mut-*fecI*-down-FW (KpnI) | GGTACCTGACTGACTGAGCCTGCCCGCCGCACCCA | mutagenesis |
| Mut-*fecI*-down-RV (NotI) | ATCGGCGGCCGCGTCGTGGCCGGTGCTGAGCTG | mutagenesis |

| | | |
|---|---|---|
| Mut-*fliA*-up-RV (KpnI) | TCAGTCAGTCAGGTACCACGGCCGAACCTGTCGC | mutagenesis |
| Mut-*fliA*-up-FW (BamHI) | ATCGGGATCCTTCAGCGATATCAGCGACAACC | mutagenesis |
| Mut-*fliA*-down-FW (KpnI) | GGTACCTGACTGACTGAACCGGCCTCGACCGCAG | mutagenesis |
| Mut-*fliA*-down-RV (NotI) | ATCGGCGGCCGCGCTCGAAAATCTTCTCGATCTTTTCC | mutagenesis |
| Mut-*fpvI*-up-FW (BamHI) | ATCGGGATCCGCCGTCGGCAACATAAGCA | mutagenesis |
| Mut-*fpvI*-up-RV (KpnI) | CAGTCAGTCAGGTACCGACGACTCCTGCTCGCTGC | mutagenesis |
| Mut-*fpvI*-down-FW (KpnI) | GGTACCTGACTGACTGATTTCGCTATTCGTGCTCGGC | mutagenesis |
| Mut-*fpvI*-down-RV (NotI) | ATCGGCGGCCGCGCGCAGGTAGTCGTTGAACTCC | mutagenesis |
| Mut-*pvdS*-up-FW (BamHI) | ATCGGGATCCATTAGCGCATGTAACCGCAATCTC | mutagenesis |
| Mut-*pvdS*-up-RV (KpnI) | CAGTCAGTCAGGTACCGGAAATCACCTTGCTGCGGA | mutagenesis |
| Mut-*pvdS*-down-FW (KpnI) | GGTACCTGACTGACTGACGGCGGCGAGCATTCCT | mutagenesis |
| Mut-*pvdS*-down-RV (NotI) | ATCGGCGGCCGCCAGCCTCCAGCCTGTCGTTTC | mutagenesis |
| Mut-*rpoN*-up-FW (PstI) | ATCGCTGCAGGCCGAAATTCATCCTCCTCGA | mutagenesis |
| Mut-*rpoN*-up-RV (XmaI) | TCAGTCAGTCACCCGGGGGCTGAGGGCTTAGTACCTTATTCG | mutagenesis |
| Mut-*rpoN*-down-FW (XmaI) | CCCGGGTGACTGACTGACGTTGATCCACGCCAAGGT | mutagenesis |
| Mut-*rpoN*-down-RV (HindIII) | ATCGAAGCTTTTGTTCGAGTACGCGTTTCTTGCT | mutagenesis |
| Mut-*rpoS*-up-FW (BamHI) | ACTGGAATTCCGGTAGTCTGATCGGCCGTTTT | mutagenesis |
| Mut-*rpoS*-up-RV (KpnI) | TCAGTCAGTCAGGTACCGTCGTTATCCCTTGCATGAGTTCG | mutagenesis |
| Mut-*rpoS*-down-FW (KpnI) | GGTACCTGACTGACTGACGGAAAACCTTAGACCCACTGAAGA | mutagenesis |
| Mut-*rpoS*-down-RV (NotI) | ATCGGCGGCCGCCTGCCCGACGCTGAGGAAT | mutagenesis |
| Mut-*sigX*-up-FW (BamHI) | ATCGGGATCCCAACTGGTGAACAGCGTCGTG | mutagenesis |
| Mut-*sigX*-up-RV (KpnI) | CAGTCAGTCAGGTACCGTGAGATCAGGCCAGTCATATCGT | mutagenesis |
| Mut-*sigX*-down-FW (KpnI) | GGTACCTGACTGACTGATTGGGTAAATATTGTCTCTCTATGCGG | mutagenesis |
| Mut-*sigX*-down-RV (NotI) | ATCGGCGGCCGCGTTGCCGTGGACCTTCTTGTT | mutagenesis |
| FRT-Gm-FRT-FW (KpnI) | GTCAGGGTACCACGATCGAATTGGGGATCTTG | mutagenesis |
| FRT-Gm-FRT-RV (KpnI) | GTCAGGGTACCTGCATGATCGAATTAGCTTCAAAAG | mutagenesis |
| FRT-Gm-FRT-FW2 (XmaI) | TCAGCCCGGGACGATCGAATTGGGGATCTTG | mutagenesis |
| FRT-Gm-FRT-RV2 (XmaI) | TCAGCCCGGGTGCATGATCGAATTAGCTTCAAAA | mutagenesis |
| P*accB*-FW (BamHI) | AGTCGGATCCCATCATCATCAATCCGGCG | bioluminescence assay |
| P*accB*-RV (EcoRI) | AGTCGAATTCGTTTGTGCACGTTCGACAGG | bioluminescence assay |
| P*algU*-FW2 (SpeI) | ACTGACTAGTCTCGTGACGCATGCTTGGA | bioluminescence assay |
| P*algU*-RV (HindIII) | ACTGAAGCTTGAAAGCTCCTCTTCGAACCTGG | bioluminescence assay |
| P*cheY2*-FW2 (SpeI) | ACTGACTAGTGGAATTGTTCTGAGGGGTATCGA | bioluminescence assay |
| P*cheY2*-RV (HindIII) | ACTGAAGCTTGGTCTTGCGTCCTCACGGT | bioluminescence assay |

| | | |
|---|---|---|
| P*flhA*-FW (SpeI) | ACTGACTAGTATCAATGAATTGAAAAGTTGGAACG | bioluminescence assay |
| P*flhA*-RV (HindIII) | ACTGAAGCTTTCTCGACTCCCCTGCCCT | bioluminescence assay |
| P*fliC*-FW (SpeI) | ACTGACTAGTAAAAAGAAAATGTTGATTTTTTCTCTAAAGCTC | bioluminescence assay |
| P*fliC*-RV (HindIII) | ACTGAAGCTTGGTGATTTCCTCCAAAGGACCTATTT | bioluminescence assay |
| P*grpE*-FW (SpeI) | ACTGACTAGTTTCCGGCTGGCAATTGCC | bioluminescence assay |
| P*grpE*-RV (HindIII) | ACTGAAGCTTGCCACTCTCCTTCAAAAATAAGCTGG | bioluminescence assay |
| P*pvdS*-FW (SacI) | ACTGGAGCTCTTAGCGCATGTAACCGCAATCTC | bioluminescence assay |
| P*pvdS*-RV (BamHI) | ACTGGGATCCGGAAATCACCTTGCTGCGGA | bioluminescence assay |
| Seq-pJN-FW | TATCCATAAGATTAGCGGATCCTACC | DNA sequencing pJN105 |
| Seq-pJN-RV | TTGTAAAACGACGGCCAGTG | DNA sequencing pJN105 |
| Seq-pJN-FW2 | TCCACATTGATTATTTGCACGG | DNA sequencing pJN105 |
| Seq-pJN-RV2 | ATTAAGTTGGGTAACGCCAGGG | DNA sequencing pJN105 |
| Seq-pEX18Ap2-FW | CTGGCCGAGTGGGTTGAAT | DNA sequencing pEX18Ap2 |
| Seq-pEX18Ap2-RV | CGCAGCGAGTCAGTGAGC | DNA sequencing pEX18Ap2 |
| Seq-pBBR-LuX-FW | TATCTGTTGTTTGTCGGTGAACG | DNA sequencing pBBR1-MCS5-TT-RBS-*lux* |
| Seq-pBBR-LuX-RV | GCAACCGTAATTCGTTATTTCCA | DNA sequencing pBBR1-MCS5-TT-RBS-*lux* |
| Seq-mut-Gm-FW | TTACCACCGCTGCGTTCG | DNA sequencing mutant check |
| Seq-mut-Gm-RV | CTAACAATTCGTTCAAGCCGAGA | DNA sequencing mutant check |

## 2.1.2 Strains and vectors

**Tab. 2.2: Strains and vectors used in this study.**

| Strain or vector | Relevant feature(s) | Source or reference |
|---|---|---|
| **Strain** | | |
| *E. coli* DH5α | Strain used for all standard cloning experiments | (*160*) |
| *E. coli* S17-1 | Mobilizing strain for RP4 Mob-containing plasmids | (*161*) |
| PA14 | Wild-type reference strain | (*162*) |
| PA14Δ*algU*::$Gm^r$ | *algU*::$Gm^r$ mutant of PA14 wild-type | This study |
| PA14Δ*fecI*::$Gm^r$ | *fecI*::$Gm^r$ mutant of PA14 wild-type | This study |
| PA14Δ*fliA*::$Gm^r$ | *fliA*::$Gm^r$ mutant of PA14 wild-type | This study |
| PA14Δ*fpvI*::$Gm^r$ | *fpvI*::$Gm^r$ mutant of PA14 wild-type | This study |
| PA14Δ*pvdS*::$Gm^r$ | *pvdS*::$Gm^r$ mutant of PA14 wild-type | This study |
| PA14Δ*rpoN*::$Gm^r$ | *rpoN*::$Gm^r$ mutant of PA14 wild-type | This study |
| PA14Δ*rpoN* | *rpoN* mutant of PA14 wild-type | This study |
| PA14Δ*rpoS*::$Gm^r$ | *rpoS*::$Gm^r$ mutant of PA14 wild-type | This study |
| PA14Δ*sigX*::$Gm^r$ | *sigX*::$Gm^r$ mutant of PA14 wild-type | This study |
| PA14Δ*sigX* | *sigX* mutant of PA14 wild-type | This study |
| PA14Δ*lasR* | *lasR* mutant of PA14 wild-type | Stephan Brouwer |
| PA14/Tn*anr* | *anr* transposon mutant, library ID 26855 | (*162*) |
| PA14/Tn*cbrB* | *cbrB* transposon mutant, library ID 44074 | (*162*) |
| PA14/Tn*fleQ* | *fleQ* transposon mutant, library ID 41540 | (*162*) |
| PA14/Tn*gacA* | *gacA* transposon mutant, library ID 34781 | (*162*) |
| PA14/Tn*rhlR* | *rhlR* transposon mutant, library ID 37943 | (*162*) |

| | | |
|---|---|---|
| **Vector** | | |
| pJN105 | Broad-host range vector pBBR1-MCS5 harboring *araC*-$P_{BAD}$ cassette from pBAD18, $Gm^r$ | (*163*) |
| pJN105-RBS-*algU* | *algU*-ORF with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*fecI* | *fecI*-ORF (PA14_13460) with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*fecI2* | *fecI2*-ORF (PA14_27690) with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*fliA* | *fliA*-ORF with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*fpvI* | *fpvI*-ORF with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*pvdS* | *pvdS*-ORF with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*rpoH* | *rpoH*-ORF with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*rpoN* | *rpoN*-ORF with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*rpoS* | *rpoS*-ORF with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*sigX* | *sigX*-ORF with optimized start and stop codon and preceding RBS cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*algU*-his8 | *algU*-ORF with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |
| pJN105-RBS-*fecI*-his8 | *fecI*-ORF (PA14_13460) with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, $Gm^r$ | This study |

| | | |
|---|---|---|
| pJN105-RBS-*fecI2*-his8 | *fecI2*-ORF (PA14_27690) with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, Gm$^r$ | This study |
| pJN105-RBS-*fliA*-his8 | *fliA*-ORF with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, Gm$^r$ | This study |
| pJN105-RBS-*fpvI*-his8 | *fpvI*-ORF with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, Gm$^r$ | This study |
| pJN105-RBS-*pvdS*-his8 | *pvdS*-ORF with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, Gm$^r$ | This study |
| pJN105-RBS-*rpoD*-his8 | *rpoD*-ORF with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, Gm$^r$ | This study |
| pJN105-RBS-*rpoH*-his8 | *rpoH*-ORF with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, Gm$^r$ | This study |
| pJN105-RBS-*rpoN*-his8 | *rpoN*-ORF with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, Gm$^r$ | This study |
| pJN105-RBS-*rpoS*-his8 | *rpoS*-ORF with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, Gm$^r$ | This study |
| pJN105-RBS-*sigX*-his8 | *sigX*-ORF with optimized start and stop codon, preceding RBS and C-terminal 8xHis coding sequence cloned into pJN105 using EcoRI and XbaI sites, Gm$^r$ | This study |
| pUC18-mini-Tn7T-Gm-*lacZ* | pUC18 derivate encoding mini-Tn7 element with transcriptional terminators and *lacZ* fusion, Gm$^r$ | (*164*) |
| pFLP3 | FLP expression vector, *sacB*$^+$, *oriT*$^+$, Ap$^r$, Tet$^r$ | (*164*) |
| pEX18Ap | gene replacement vector with MCS from pUC18, *oriT*$^+$, *sacB*$^+$, Ap$^r$ | (*165*) |
| pEX18Ap2 | pEX18Ap derivate, 845 bp fragment containing *5S rRNA*, *lacZ alpha* and MCS removed by inverse PCR, novel MCS generated with unique restriction sites for XhoI, PstI, SmaI/XmaI, XbaI, SacI, HindIII, NheI, NotI, MluI, KpnI, BamHI, EcoRI, Ap$^r$ | This study |

| | | |
|---|---|---|
| pEX18Ap2-up-*algU*-down-*algU* | pEX18Ap2 harboring 484 bp upstream and 498 bp downstream region of *algU* ORF with a junction sequence encoding for a KpnI-site and three shifted stop codons, $Ap^r$ | This study |
| pEX18Ap2-up-*fecI*- down-*fecI* | pEX18Ap2 harboring 464 bp upstream and 491 bp downstream region of *fecI* ORF (PA14_13460) with a junction sequence encoding for a KpnI-site and three shifted stop codons, $Ap^r$ | This study |
| pEX18Ap2-up-*fliA*- down-*fliA* | pEX18Ap2 harboring 500 bp upstream and 462 bp downstream region of *fliA* ORF with a junction sequence encoding for a KpnI-site and three shifted stop codons, $Ap^r$ | This study |
| pEX18Ap2-up-*fpvI*- down-*fpvI* | pEX18Ap2 harboring 474 bp upstream and 474 bp downstream region of *fpvI* ORF with a junction sequence encoding for a KpnI-site and three shifted stop codons, $Ap^r$ | This study |
| pEX18Ap2-up-*pvdS*-down-*pvdS* | pEX18Ap2 harboring 491 bp upstream and 471 bp downstream region of *pvdS* ORF with a junction sequence encoding for a KpnI-site and three shifted stop codons, $Ap^r$ | This study |
| pEX18Ap2-up-*rpoN*-down-*rpoN* | pEX18Ap2 harboring 487 bp upstream and 483 bp downstream region of *rpoN* ORF with a junction sequence encoding for a XmaI-site and three shifted stop codons, $Ap^r$ | This study |
| pEX18Ap2-up-*rpoS*-down-*rpoS* | pEX18Ap2 harboring 450 bp upstream and 485 bp downstream region of *rpoS* ORF with a junction sequence encoding for a KpnI-site and three shifted stop codons, $Ap^r$ | This study |
| pEX18Ap2-up-*sigX*-down-*sigX* | pEX18Ap2 harboring 485 bp upstream and 381 bp downstream region of *sigX* ORF with a junction sequence encoding for a KpnI-site and three shifted stop codons, $Ap^r$ | This study |
| pBBR1-MCS5-TT-RBS-*lux* | Broad-host range vector pBBR1-MCS5 harboring *luxCDABE* and terminators lambda *T0 rrnB1 T1* for plasmid-based transcriptional fusions, $Gm^r$ | (*166*) |
| pBBR1-MCS5-TT-P*accB*-RBS-*lux* | -254,-144 fragment upstream of *accB*-ORF cloned into pBBR1-MCS5-TT-RBS-*lux* using BamHI and EcoRI sites, $Gm^r$ | This study |
| pBBR1-MCS5-TT-P*algU*-RBS-*lux* | -110,+1 fragment upstream of *algU*-ORF cloned into pBBR1-MCS5-TT-RBS-*lux* using SpeI and HindIII sites, $Gm^r$ | This study |
| pBBR1-MCS5-TT-P*cheY2*-RBS-*lux* | -210,+1 fragment upstream of *cheY2*-ORF (PA14_02260) cloned into pBBR1-MCS5-TT-RBS-*lux* using SpeI and HindIII sites, $Gm^r$ | This study |
| pBBR1-MCS5-TT-P*flhA*-RBS-*lux* | -119,+1 fragment upstream of *flhA*-ORF cloned into pBBR1-MCS5-TT-RBS-*lux* using SpeI and HindIII sites, $Gm^r$ | This study |

| | | |
|---|---|---|
| pBBR1-MCS5-TT-P*fliC*-RBS-*lux* | -146,+1 fragment upstream of *fliC*-ORF cloned into pBBR1-MCS5-TT-RBS-*lux* using SpeI and HindIII sites, $Gm^r$ | This study |
| pBBR1-MCS5-TT-P*grpE*-RBS-*lux* | -121,+1 fragment upstream of *grpE*-ORF cloned into pBBR1-MCS5-TT-RBS-*lux* using SpeI and HindIII sites, $Gm^r$ | This study |
| pBBR1-MCS5-TT-P*pvdS*-RBS-*lux* | -500,+1 fragment upstream of *pvdS*-ORF cloned into pBBR1-MCS5-TT-RBS-*lux* using SacI and BamHI sites, $Gm^r$ | This study |

$Ap^r$, ampicillin resistance; FLP, flippase; $Gm^r$, gentamicin resistance; MCS, multiple cloning site; ORF, open reading frame; *oriT*, origin of transfer; RBS, ribosomal binding site; $Tet^r$, tetracycline resistance; Tn, transposon.

### 2.1.3 Software

**Tab. 2.3: Software used in this study.**

| Software name | Reference |
|---|---|
| ApE (version 2) | (*167*) |
| Bowtie | (*168*) |
| Circos (version 0.64) | (*169*) |
| ClustalW2 | (*150*) |
| DESeq (version 1.10.1) | (*170*) |
| EA-utils | (*171*) |
| FigTree (version 1.4) | (*151*) |
| FIMO | (*172*) |
| MACS | (*173*) |
| MEME | (*174*) |
| NEBcutter2.0 | (*175*) |
| Primer3 | (*159*) |
| Pseudomonas Genome database | (*176*, *177*) |
| Stampy | (*178*) |
| Venny | (*179*) |

# 2.2 Methods

## 2.2.1 Vector and strain construction

**Vector construction**

For sigma factor hyper-expression in *P. aeruginosa*, the corresponding sigma factor gene was amplified by polymerase chain reaction (PCR) using forward primer harboring a ribosomal binding site and the ATG start codon as well as a reverse primer with the stop codon TGA. All primers used in this study are listed in Tab. 2.1. PCR products were digested with EcoRI and XbaI and introduced into the corresponding sites of the broad-host range plasmid pJN105 under control of $P_{BAD}$ resulting in pJN105-RBS-σ (*163*) in *E. coli* DH5α (*160*). For ChIP-seq experiments, pJN105-RBS-σ-8xhis was constructed using a reverse primer additionally encoding for an octahistidine-tag. For bioluminescence assays, selected sigma factor target promoters were amplified by PCR using PA14 wild-type genomic DNA and the PCR products were ligated into pBBR1-MCS5-TT-RBS-*lux* (*166*). Vectors were transferred into respective *P. aeruginosa* PA14 strains by electroporation as previously described (*180*).

**Strain construction**

The PA14Δσ::$Gm^r$ deletion mutant strains were constructed according to a modified protocol using overlap extension PCR as described previously (*181*). The gene replacement vector pEX18Ap (*165*) was modified by inverse PCR to remove the coding sequence for 5S rRNA. In addition, the resulting vector pEX18Ap2 encompasses a novel multiple cloning site (MCS) established by primer extensions. Regions up- and downstream of the sigma factor gene were amplified by PCR as indicated in Tab. 2.1. The primer Mut-σ-up-RV and Mut-σ-down-FW harbored complementary sequences coding for three shifted stop codons and a KpnI restriction site (XmaI for *rpoN*). The two corresponding PCR products were fused in a second PCR and the obtained fragment was introduced in pEX18Ap2 at cognate restriction sites resulting in pEX18Ap2-up-σ-down-σ. The pEX18Ap2-up-σ-Gm-down-σ vectors were produced by ligation of a flippase (FLP)-excisable gentamicin cassette amplified from pUC18-mini-Tn7T-Gm-*lacZ* (*164*) into pEX18Ap2-up-σ-down-σ. These constructs were transformed in *E. coli* S17-1 (*161*) and transferred into PA14 wild-type by conjugation. Single crossovers were selected on gentamicin. Counter-selection in low salt LB supplemented with sucrose was used to force plasmid resolution resulting in PA14Δσ::$Gm^r$. To reduce adverse growth effects, counter-selection for PA14Δ*sigX*::$Gm^r$ was performed in BM2 (*182*) and PA14Δ*rpoN*::$Gm^r$ in LB supplemented with 1 mM glutamine. The gentamicin cassette was excised from

PA14Δσ::Gm$^r$ using the FLP expression vector pFLP3 as described elsewhere (*164*) to obtain PA14Δσ. Vectors as well as PA14Δσ::Gm$^r$ strains were confirmed via DNA-sequencing which was performed by the Genome Analytics group of the Helmholtz Centre for Infection Research.

### 2.2.2 mRNA profiling, quantification of gene expression and data analysis

**mRNA profiling**

For mRNA profiling, two independent experiments were performed and each experiment included pooling of three individual main cultures. RNA was prepared from PA14 wild-type, PA14Δσ:Gm$^r$, PA14Δσ, PA14(pJN105), PA14(pJN105-RBS-σ) and PA14Δ*lasR*, PA14/Tn*anr*, PA14/Tn*cbrB*, PA14/Tn*fleQ*, PA14/Tn*gacA*, PA14/Tn*rhlR* growing in 10 ml liquid medium at 37°C with shaking unless otherwise stated. Gentamicin was added to medium for plasmid maintenance when necessary. To induce sigma factor hyper-expression, L-arabinose (Sigma-Aldrich™) was added to a final concentration of 0.5% to PA14:pJN105-RBS-σ and the corresponding control PA14(pJN105). Sigma factor deletion mutants were cultivated as the sigma factor hyper-expressing strains; however without induction and without gentamicin. Growth conditions for all samples were specified in Tab. 5.1. RNA extraction, cDNA library preparation and Illumina™ sequencing were performed as previously described (*183*). In brief, cells were harvested after addition of RNA protect buffer (Qiagen™) and RNA was isolated from cell pellets using the RNeasy™ plus kit (Qiagen™). mRNA enrichment was performed using the MICROBExpress™ kit (Ambion™). RNA was fragmented and ligated to specific RNA adapters containing a hexameric barcode sequence for multiplexing. The obtained RNA libraries were reverse transcribed and amplified resulting in cDNA libraries ready for sequencing. All samples were sequenced on an Illumina™ Genome Analyzer II-x in the Single End mode with 36 cycles or on a HiSeq™ 2500 device involving 50 cycles.

**Quantification of gene expression**

Sequence reads were separated according to their barcodes and barcode sequences were removed. The short reads were used without any trimming. Sequences were mapped to the genome sequence of the reference strain *P. aeruginosa* PA14 wild-type using stampy (*178*) with default settings. The R package DESeq (*170*) was used for differential gene expression analysis. Briefly, the reads-per-gene data were pre-filtered to exclude rRNA and tRNA genes and then normalized for variation in library size/sequencing depth by using the ‘estimateSizeFactor’ function of DESeq. Differentially expressed genes were identified using the ‘nbinomTest’ function based on the negative binomial model. The Benjamini and Hochberg correction was used to control the false-discovery rate at 0.05 to determine the list of regulated genes. Data quality assessment and quality control was performed on the variance stabilizing data that were generated by re-estimating the dispersion with method 'blind' in DESeq to ensure that the variance stabilizing transformation is not informed about the design and not biased towards a result supporting the design (*170*). We used three different methods to check the data quality: a matrix of scatter plots of the variance stabilization transformed data of all hyperexpressed/deletion mutant replicates and relevant controls against each other, a principal component analysis of the samples using the 100 most variable genes and hierarchical cluster analysis of samples using the 50 most variable genes displayed in a heatmap that also shows clustering of the expression values of these genes. The quality control output in PDF format is deposited for download as part of the supplementary information to the Gene Expression Omnibus dataset with the accession number GSE54998.

**Data analysis**

For each comparison, two biological replicates for each condition were used. Genes were identified as differentially expressed if they fulfilled the following criteria: (i) an at least 3-fold down-regulation in the sigma factor mutant strain as compared to the corresponding wild-type strain or an at least 3-fold up-regulation in the sigma factor hyper-expressing strain as compared to the cognate empty vector control strain and (ii) the Benjamini-Hochberg corrected P value was smaller than 0.05 with the exception of PA14Δ*fpvI*:Gm$^r$ and PA14Δ*fecI*:Gm$^r$ whose cut-off values were set to a fold change of at least 2 using the uncorrected P value. To appraise sigma factor competition, we determined also the negative impact of sigma factor hyper-expression on global gene expression and considered genes which were at least 3-fold down-regulated with a maximal corrected P value of 0.05. To analyze the regulons of transcription factor mutant strains, genes were regarded as differentially expressed, if they were at least 2-fold down- or up-regulated in comparison to the wild-type, and the corrected P value was maximally 0.05. Raw and processed expression data have been submitted to the Gene Expression Omnibus database under the accession number GSE54998 (SuperSeries GSE54999) for sigma factors and GSE55328 for transcription factors (Tab. 5.4). An overview of these gene expression data is specified in Tab. 5.2.

Next, the set of 2218 differentially expressed genes was selected for a hierarchical cluster analysis. The computation of the hierarchical expression tree requires normalized expression values, therefore the gene read counts were normalized to yield *nRPK* values (*183*) (normalized reads per kilobase of gene sequence) using the following equation:

$$nRPK_{ij} = \log_2\left(\frac{1000}{l_i} * \frac{RPG_i}{F_j} + 1\right)$$

where $l_i$ is the length of gene *i*, $RPG_i$ is the number of reads that mapped to the locus of gene *i* and $F_j$ is the size factor (calculated by DESeq) of the dataset j. The *nRPKs* of the 2218 genes were used as an input for hierarchical clustering that measures the similarities between the different transcriptional profiles. We computed the pair-wise Pearson correlation between the *nRPKs*, where the Pearson correlation coefficient is a similarity metric, whose values vary from -1 (perfect anti-correlation) to +1 (perfect correlation). The hierarchical clustering algorithm requires a distance matrix, where high values indicate strong differences between two objects (expression profiles). Pearson's correlation can be transformed into a distance metric by subtracting from 1. Thus, the Pearson distance varies from 0 (perfect correlation) to 2 (perfect anti-correlation). After computing the Pearson distances between each pair of genes, we performed hierarchical clustering by progressively grouping them: at each step of the iterative algorithm the two genes or gene clusters that have the smallest distance were merged to form a new cluster, and two branches of a growing tree were joined. The lengths of the branches are equal to the half of the distance between two genes or gene clusters. We used the average linkage rule; this means that the distance between two clusters is computed as the mean of all the distances between the genes in the first cluster and the genes in the second cluster. All calculations were performed in R using the ‘hclust’ function.

To define the adaptive transcriptome, the PA14 wild-type was grown under 14 different environmental conditions (Tab. 5.1) and transcriptional profile were recorded. RNA-seq data were processed as described above and *nRPK* values were calculated. To determine differential gene expression profiles, pair-wise comparisons between the 14 experimental conditions were performed using the negative ‘nbinomTest’ implemented in DESeq, treating samples with identical growth conditions as replicates. Comparing the expression of a particular gene between two different conditions, the differential expression was only calculated and considered for further use, if both expression values were greater than 0. The adaptive transcriptome was defined as the set of genes that showed differential gene expression in at least one pair-wise comparison between the 14 conditions. Statistically significant differential expression was assumed, if the Benjamini-Hochberg corrected P value was maximally 0.05.

cDNA libraries were prepared by Agata Bielecka. Illumina™ sequencing was performed by the Genome Analytics group of the Helmholtz Centre for Infection Research. Processed RNA-seq data were provided by Raimo Franke for further analyses, hierarchical clustering was performed by Denitsa Eckweiler and the adaptive transcriptome was determined by Andreas Dötsch. The transcriptome of the PA14Δ*lasR* was recorded and provided by Stephan Brouwer. The transcriptomes under *ex vivo*, anaerobic, low phosphate and attachment conditions were kindly provided by Piotr Bielecki, Christian Pustelny, Vanessa Jensen and Julia Gödeke.

### 2.2.3 Chromatin immunoprecipitation plus Illumina™ sequencing and data analysis

**Chromatin immunoprecipitation plus Illumina™ sequencing**

For each ChIP-seq approach, two independent experiments were performed, and each experiment included pooling of two individual cultures. ChIP-seq was applied to four 20 ml cultures of PA14(pJN105-RBS-σ-8xhis) and PA14(pJN105) as a control strain under the conditions as specified in Tab. 5.1. Individual cultures were combined and incubated with a final concentration of 0.5% formaldehyde (Roth™) for 5 min at room temperature with gentle agitation to conserve DNA-protein interactions. The reaction was quenched by addition of glycine to a final concentration of 137 mM for 2 min at room temperature and gentle agitation. Cells were harvested at 2500 x g for 20 min at 4°C and washed first with 10 ml of chilled phosphate-buffered saline (PBS) and then with 10 ml of chilled Tris-buffered saline (TBS). Finally, cells were washed with 1 ml of chilled TBS and transferred to 1.5 ml tubes, and cell pellets were stored at -70°C. Cell pellets were resuspended in 0.5 ml of lysis buffer (10 mM Tris-HCl, pH 8, 20% sucrose, 50 mM NaCl, 10 mM EDTA) and lysozyme (20 mg $ml^{-1}$) was added to a final concentration of 4 mg $ml^{-1}$. The reaction mix was incubated at 37°C for 30 min. Cell suspensions were combined and transferred into a 15 ml tube containing 1.5 ml of immunoprecipitation (IP) buffer (PBS, pH 7.4, 1 mM EDTA, 1% NP-40, 0.1% sodium deoxycholate) supplemented with 0.1% SDS and proteases inhibitors (Roche™) and incubated on ice. Under constant cooling, DNA was fragmented to an average size of 200 to 250 bp by sonication for 5 cycles of 45 s at level 4 with a 90% duty cycle (Branson™ Sonicator S250 Analogue), and aliquots were stored at -70°C. Next, cell debris was removed from cell extracts by centrifugation, and for each experiment, in total 3 ml of cell extract was subjected to chromatin immunoprecipitation with 15 µl of anti-6xHis tag antibody (ab9108; abcam™) overnight at 4°C and with rotation. DNA-sigma factor-antibody complexes were captured with Dynabeads™ protein G (100.04D; Invitrogen™) for 1 h at room temperature with rotation and isolated using a magnetic stand (Qiagen™). Beads were washed three times with IP buffer and eluted in two steps with 100 µl and 50 µl of elution buffer (50 mM Tris-HCl, pH 7.5, 10 mM EDTA, 1% SDS) for 15 min at 65°C on a rocking platform. The eluate (100 µl) was incubated with 1 µl of RNase A (100 mg $ml^{-1}$) for 30 min at 65°C, and 5 µl of proteinase K (20 mg $ml^{-1}$) was added and incubated for 1 h at 50°C and then for 6 h at 65°C, followed by a second incubation with 5 µl of proteinase K (20 mg $ml^{-1}$) for 1 h at 50°C. Immunoprecipitated DNA was recovered using a QIAquick™ PCR purification kit (Qiagen™) and subjected to a modified linear DNA amplification (LinDA) protocol described recently (*184*). Major changes included additional DNA purification after every reaction step until *in vitro* transcription, use of modified LinDA primer (Tab. 2.1) and RNA isolation with an RNeasy™ Plus Kit (Qiagen™) instead of phenol-chloroform extraction followed by ethanol precipitation. For next generation sequencing, up to 50 ng of DNA was used to prepare libraries using the TruSeq™ DNA sample preparation kit (Illumina™) according to the low-throughput protocol which encompasses in our case the following steps: DNA end repair, adenylation of 3'-ends, ligation of adapters, and purification, enrichment and validation of processed DNA fragments. Finally, prepared DNA was subjected to Illumina™ sequencing platforms.

**Data analysis**

ChIP-seq data was analyzed by removing adapter sequences using the 'fastq-mcf' script that is part of the EA-utils package (*171*). During the same step, reads were trimmed allowing for minimal quality of 10 at their ends. The Bowtie aligner (*168*) was used to map the reads against the PA14 reference sequence. The observed genomic read coverage was more than 100 times in both experiments. Model-based analysis of ChIP-seq (*173*) was applied for peak detection using a P value cutoff of 0.05 and shift size 30 for the peak modeling, making use of the relevant control samples. Promoter hits were considered significant when they were detected in both ChIP-seq approaches with an enrichment factor (EF) of at least 3 and a P value of less than 0.01. Statistical analysis of the obtained candidates was performed to assess the number of false-positives and the corresponding P value according to the hypergeometric test in R using the 'phyper' command. Raw and processed ChIP-seq data have been submitted to the Gene Expression Omnibus database under the accession number GSE54997 (SuperSeries GSE54999).

The LinDA section of the established LinDA-ChIP-seq protocol was conducted by Tanja Nicolai. The preparations of ChIP-seq libraries and Illumina™ sequencing were performed by the Genome Analytics group of the Helmholtz Centre for Infection Research. ChIP-seq raw data were processed and kindly provided by Denitsa Eckweiler for further analyses.

### 2.2.4 Definition and analyses of primary sigma factor regulons

As described previously for the SigX regulon (*148*), the primary sigma factor regulons were defined by including genes which fulfilled at least two of the following three criteria: (i) they exhibited sigma factor-dependent regulation of expression, (ii) they have a promoter that was enriched in both replicates of the ChIP-seq experiments and (iii) they have a promoter that harbors a sigma factor binding site. Unless otherwise stated, each sigma factor binding motif was identified by applying the MEME suite (*174*) on promoter regions whose respective genes (i) showed at least a 3-fold sigma factor-dependent down-regulation in PA14Δσ::Gm$^r$ and at least a 3-fold sigma factor-dependent up-regulation in PA14 (pJN105-RBS-σ) or alternatively a more than 10-fold down-regulation in PA14Δσ::Gm$^r$ only or a more than 10-fold up-regulation in PA14(pJN105-RBS-σ) only and (ii) were defined to be the first gene of a transcriptional unit (TU). General parameters were selected as followed: occurrence (0 or 1 per sequence), number of sites (minimum, 7) and activated DNA option ‘search given strand only’. The motif width was adapted to each sigma factor. Furthermore, a background Markov model was supplied. Next, the obtained motif was forwarded to FIMO (*172*) to identify putative sigma factor binding sites in all promoter regions across the PA14 genome. Promoter hits with a P value less than 0.0005 were regarded as significant. Eventually, statistical significance of these primary regulon members was checked by performing a hypergeometric test using the ‘phyper’ command in R on the intersections ChIP-seq/RNA-seq, RNA-seq/motif search and ChIP-seq/motif search (Tab. 5.5). Only groups of genes whose P values were less than 0.1 as well as genes which were hit in all three approaches were considered to be part of the primary sigma factor regulon. To include not only first genes but all genes of identified TUs, downstream genes were added, if the first gene met the criteria indicated above. These final sets of genes (Tab. 5.4) were functionally characterized using the PseudoCAP annotation (*185*). To further improve this profiling, the PseudoCAP annotation of PA14 was updated by adding the PseudoCAP classes of PAO1 homologs to corresponding PA14 genes. Furthermore, the alternative gene name was provided and highlighted with an asterisk, if no gene name was annotated. To determine the enrichment factor of each PseudoCAP category, the ratio of normalized experimental and annotation data was calculated as previously described (*148*). Finally, the significance of over-represented PseudoCAP categories was examined (Tab. 5.6).

The TU annotation was kindly provided by Andreas Dötsch. The definition of the primary RpoS regulon includes results of a previously performed RpoS ChIP-chip study and corresponding data were kindly provided by Sebastian Bruchmann and Juliane Düvel (*186*).

### 2.2.5 Bioluminescence assay

For each bioluminescence assay, three independent experiments were performed and each experiment included pooling of three biological replicates. Reporter strains (Tab. 2.2) harboring selected sigma factor target promoter fused to the *luxCDABE* cassette of *Photorhabdus luminescens* were grown under the same conditions as described previously (Tab. 5.1). Bioluminescence of 200 µl bacterial suspension was measured in a black 96-well microtiter plate with a transparent and flat bottom. In parallel, cell density was determined using a standard photometer. Relative light units (RLU) were normalized to the optical density at a wavelength of 600 nm ($OD_{600}$) and the arithmetic average was calculated. Next, the average bioluminescence over the three independent assays was calculated and compared to the bioluminescence of the respective control reporter strain, e. g. the reporter construct in the corresponding sigma factor mutant strain or the PA14 wild-type strain harboring the empty vector (Tab. 2.2). The standard deviation was determined and the statistical significance was examined using the two-tailed Student’s t-test assuming unequal variances (Tab. 5.8).

# 3 Results

## 3.1 The positive and negative impact of alternative sigma factors on global gene expression in *P. aeruginosa*

In order to quantify the contribution of sigma factors to the overall transcriptome plasticity of *P. aeruginosa*, the alternative sigma factors AlgU (RpoE), FliA (RpoF), RpoH, RpoN, RpoS, PvdS, SigX, FpvI, FecI and FecI2 were hyper-expressed in the *P. aeruginosa* type strain PA14 and the impact of sigma factor hyper-expression on the transcriptional profile was evaluated. These alternative sigma factors were also inactivated in PA14 (with the exception of RpoH and FecI2) and the transcriptional profiles were again recorded (2.2.1 and 2.2.2). Overall, 2218 genes were found to be differentially regulated in response to the (hyper-) presence and/or absence of at least one sigma factor (Tab. 5.2 and 5.4).

To reveal conserved and diverged co-expression patterns of those differentially regulated genes, the significance of co-expression was quantified by calculating the distribution of pair-wise correlations between genes (2.2.2). The results are summarized as a tree created by hierarchical clustering (Fig. 3.1A). Clearly, groups of genes clustered together, indicating their co-regulation under the conditions of hyper-expression and/or inactivation of *P. aeruginosa* sigma factors. The majority of 1504 genes (67.8%) was differentially regulated due to hyper-expression and/or inactivation of only one single sigma factor. However, there was also shared regulation (Fig. 3.1B and 3.1C); the expression level of 471 genes (21.2%) was found to be influenced by two sigma factors and a minority of 243 genes (11%) by more than two sigma factors (Tab. 5.2 and 5.3). To gauge effects of sigma factor competition for a limiting amount of RNA polymerase, we also analyzed the negative impact of sigma factor hyper-expression on the global gene expression profile. Overall 644 genes (10.9%) were down-regulated upon hyper-expression of one of the ten alternative sigma factors, 169 genes (2.9%) were negatively affected by two sigma factor and only 85 genes (1.4%) by more than two sigma factors (Tab. 5.2). These results indicate that although the expression of distinct genes might be affected by sigma factor competition (Fig. 3.2), there is no notable sigma factor competition on a global scale indicating robustness of overall gene expression to drastic shifts of sigma factor levels.

A

B

C

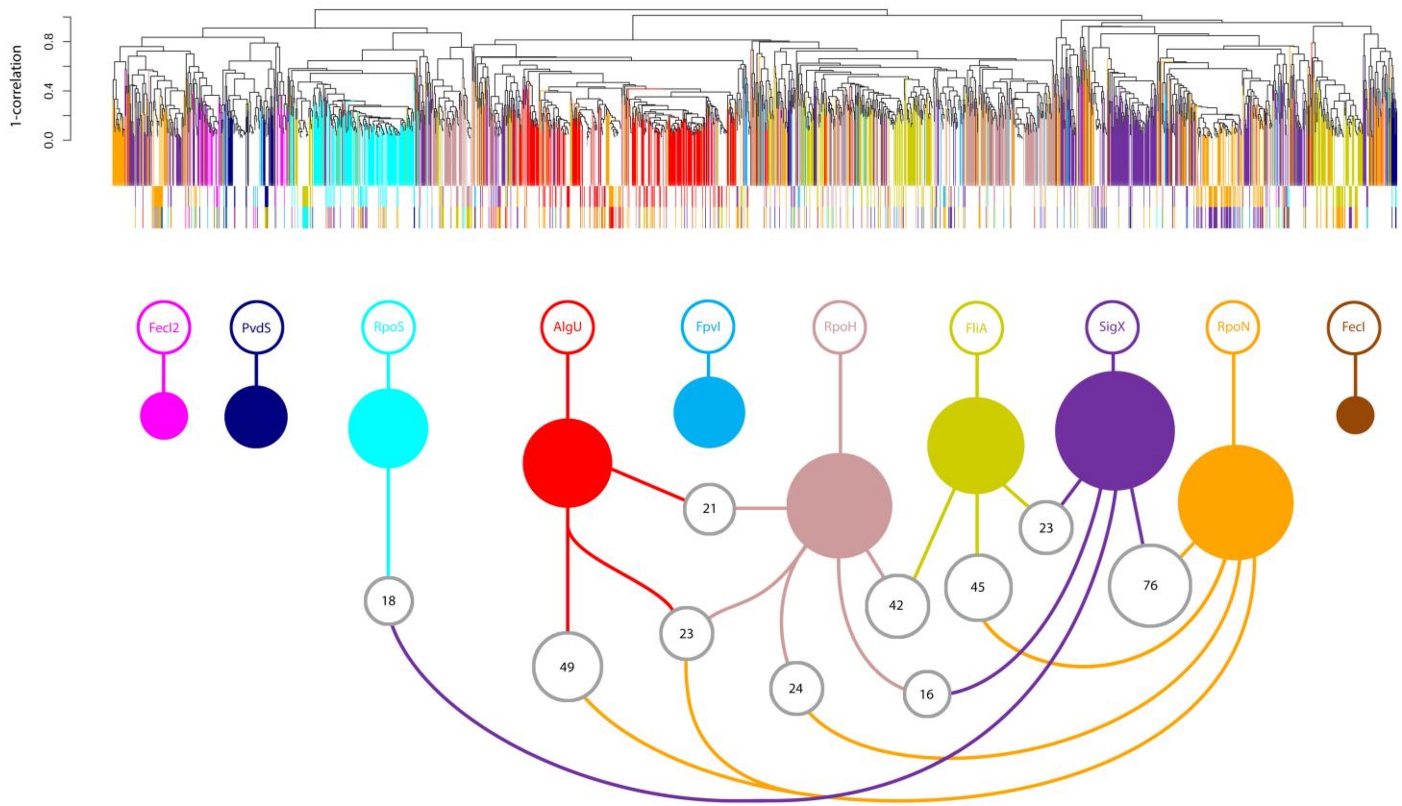
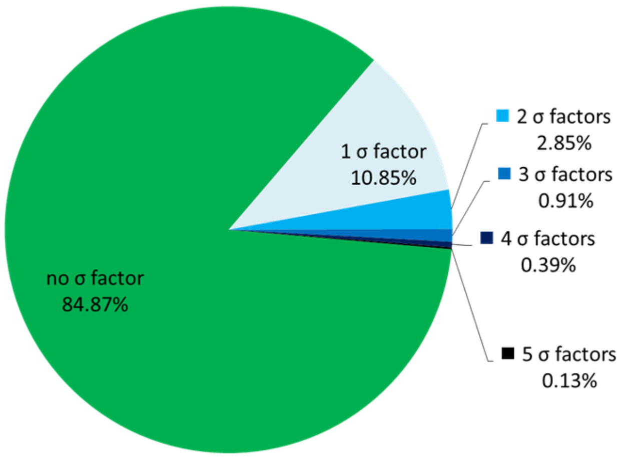



**Fig. 3.1: Positive impact of sigma factors on global gene expression in *P. aeruginosa*.**
Conserved and diverged co-expression patterns of 2218 genes were found to be differentially regulated upon (hyper-) presence and/or absence of at least one sigma factor. **(A)** Hierarchical clustering based on Pearson correlation coefficients shows the distribution of pair-wise correlations between genes. 1504 genes (67.8%, vertically colored) were differentially regulated due to hyper-expression and/or inactivation of a single sigma factor indicating that the sigma factor regulons are distinct functional modules. Genes regulated by more than one sigma factor are shown in white. **(B)** The expression levels of 471 genes (21.2 %) were found to be influenced by two sigma factors (indicated by the two colored bars). **(C)** White balls illustrate the number of genes that are affected by two sigma factors. Only the ten most frequent sigma factor combinations (Tab. 5.3) are highlighted. The sizes of the colored balls are scaled according to the sizes of the individual co-regulons. This figure was created by Denitsa Eckweiler and Fiordiligie Casilag.

**A**




**B**

**Most sigma factor competition-sensitive genes**
PA14_05600
PA14_10360
PA14_11810
PA14_13130
PA14_26020
PA14_40240
PA14_55850
PA14_55940
PA14_60730
PA14_00640 (phzH)
PA14_07090 (metK)
PA14_09370-PA14_09380
PA14_18630 (eprS*)
PA14_24650 (rmf)
PA14_34870 (chiC)
PA14_38840 (exaC*)
PA14_39780 (hvn*)
PA14_60750 (pra)
PA14_70690 (glcD)
PA14_09270 (pchE)-PA14_09320 (pchI*)
PA14_09340 (fptA)-PA14_09350 (fptB*)
PA14_09240 (pchD)-PA14_09230 (pchC)-PA14_09220 (pchB)
PA14_55930-PA14_55920-PA14_55900-PA14_55890 (cpaF2*)

**Fig. 3.2: Negative impact of sigma factors on global gene expression in *P. aeruginosa*.**
**(A)** Impact of sigma factor hyper-expression on down-regulation of genes. **(B)** Genes which are affected negatively by the hyper-expression of four or five sigma factors are specified.

## 3.2 Definition and functional profiling of primary sigma factor regulons

Next, transcriptome data were complemented with chromatin immunoprecipitation coupled to Illumina™ sequencing experiments to define the primary regulons of the *P. aeruginosa* sigma factors and thus to differentiate direct from indirect sigma factor-dependent regulation of genes. Variants of the house-keeping sigma factor RpoD and the ten alternative sigma factors fused to an octahistidine-tag were constructed and sigma factor bound genomic DNA was sequenced (2.2.3). ChIP-seq and RNA-seq data as well as selective sequencing of transcriptional start sites and prediction of transcriptional units were used as the basis for elucidating the *de novo* binding motif of each sigma factor using the MEME suite (*174*) (2.2.4). As exemplified in the previously published primary regulon of SigX (*148*), a gene was defined to be a member of the primary regulon of the ten alternative *P. aeruginosa* sigma factors if it fulfilled at least two of the following three criteria: (i) it exhibited sigma factor-dependent regulation of expression, (ii) its promoter was enriched in ChIP-seq experiments and (iii) its promoter contained a sigma factor binding site. The comprehensive analyses of the individual primary sigma factor regulons including functional profiling based on an updated PseudoCAP annotation (*185*) (2.2.4) are specified below.

### 3.2.1 The primary AlgU regulon

The ECF sigma factor AlgU is encoded on the operon *algU-mucABCD* and was described to be the key regulator of alginate biosynthesis (*131, 187*). In concert with its downstream genes, AlgU plays a major role in the conversion of *P. aeruginosa* to the mucoid phenotype which frequently occurs in cystic fibrosis patients during chronic infections (*188, 189*). Further studies revealed that AlgU governs the general cell envelope stress response to various environmental challenges such as extreme heat-shock (*190*), oxidative stress (*132*), cell wall-inhibitory antibiotics (*191*) and spaceflight-analogue conditions (*192*). Finally, AlgU is involved in the formation of robust biofilms via regulation of the polysaccharide matrix synthesis, lectin production and type IV pilus biogenesis (*193*). The broad impact of AlgU on global gene expression is reflected by its primary regulon size of 341 genes organized in 247 TUs (Fig. 3.3B). The AlgU binding motif was deduced from 49 promoter regions (Fig. 3.3C) and is highly similar to the previously proposed AlgU consensus sequence GAACTT-$N_{16-17}$-TCtgA (*194*). In accordance with the known functions of AlgU, there is a strong to moderate gene enrichment in PseudoCAP categories which are associated with cell envelope integrity such as adaptation/protection, cell wall/LPS/capsule, antibiotic resistance and susceptibility and fatty acid and phospholipid metabolism (Fig. 3.3A). Prominent members of the primary AlgU regulon are the alginate genes *alg8-alg44-algKEGXL* and *algC* as well as the operon *algU-mucABCD*. The cell-shape determining genes *mreBCD* as well as the genes *ftsE, ftsX* and *bolA* were identified highlighting the contribution of AlgU to this small group of cell division-associated genes. Moreover, six genes involved in the RND efflux machinery (PA14_01940-PA14_01960-PA14_01970 and PA14_31870-PA14_31890- PA14_31900), *bacA*, *nagZ* and the putative beta-lactamase PA14_72760 as well as the fatty acid metabolism-associated genes *fadE*, *gpsA*, *fabAB*, *phaJ3, ybhO** in combination with seven lipoproteins (PA14_00740, PA14_16640, PA14_24440, PA14_24880, PA14_61390, PA14_67460 and PA14_72900) complete the profile of AlgU. Importantly, the regulon analysis does not only confirm the reported auto-regulation of *algU* (*131*) but also shows the regulation of *rpoH* providing further evidence for a direct link of the extracellular function sigma factor AlgU and the cytoplasmatic sigma factor RpoH (*195*). Strikingly, genes which are associated with chemotaxis, motility and attachment are virtually absent in the primary AlgU regulon which is consistent with the finding that AlgU negatively controls flagellum biosynthesis in *P. aeruginosa* via repression of the master regulator gene *fleQ* (*196*).

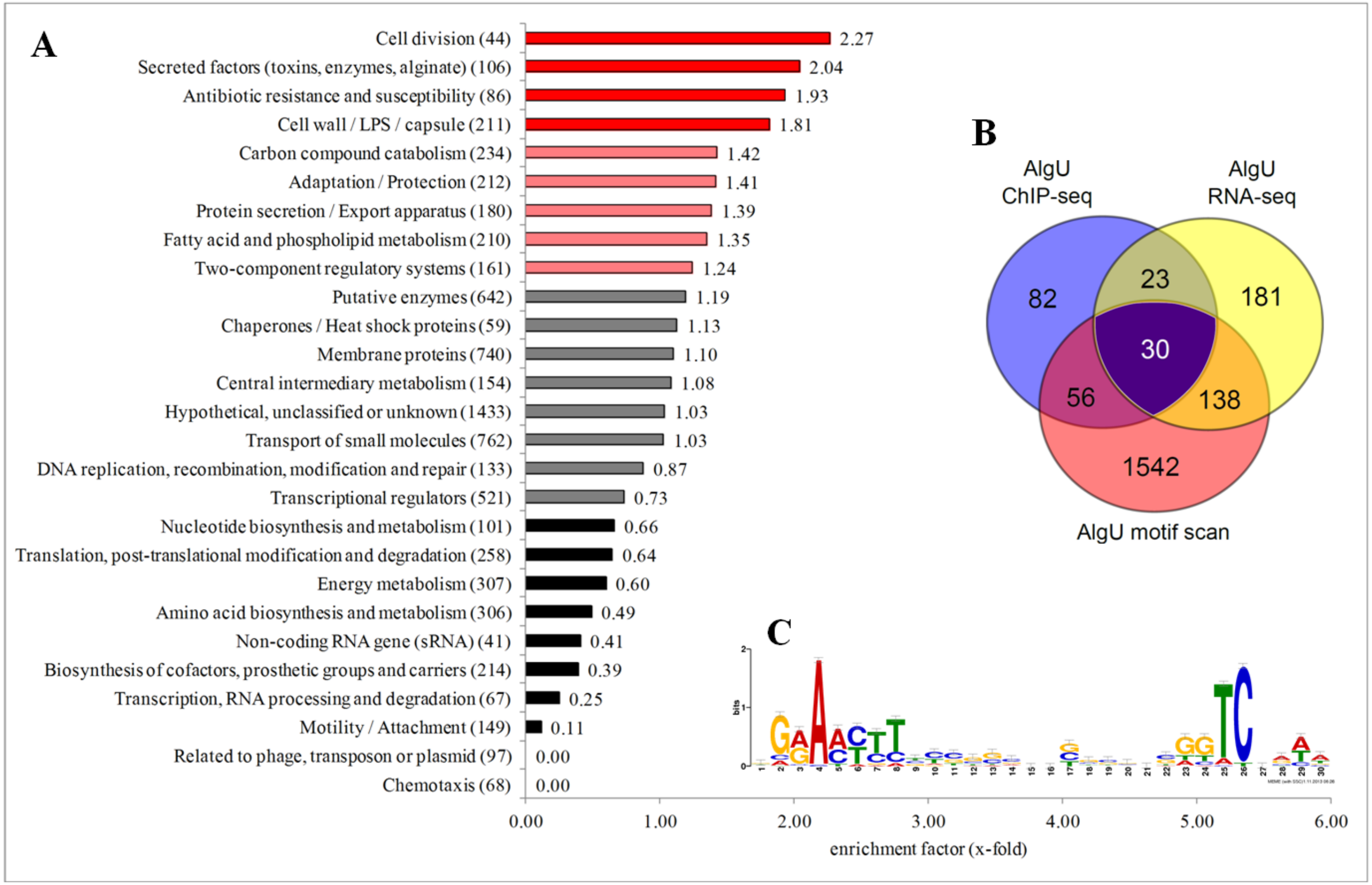



**Fig. 3.3: Analyses of the primary AlgU regulon in *P. aeruginosa*.**
**(A)** The PseudoCAP annotation (*185*) was used to categorize and functionally profile the members of the primary AlgU regulon and the enrichment of specific gene classes is displayed. Strong and moderate over-represented classes are highlighted in dark and light red, while under-represented classes are shown in black. PseudoCAP classes which are associated with the cell envelope stress response are strongly over-represented. **(B)** Quantitative analysis of the primary AlgU regulon representing the contribution of ChIP-seq, RNA-seq and motif scan. **(C)** *de novo* AlgU motif elucidation (E value: 3.0e-11) is based on RNA-seq data and TU annotation using the MEME suite (*174*).

### 3.2.2 The primary FliA regulon

FliA is the alternative sigma factor which is linked to motility and thus governs the expression of flagellar and chemotaxis genes in many bacterial species like *P. aeruginosa* (*135*), *E. coli* (*136*), *Samonella typhimurium* (*137*) and *Bacillus subtilis* (*138*). Accordingly, the functional profiling of the primary FliA regulon displays the strongly over-represented PseudoCAP categories chemotaxis, motility/attachment and adaptation/protection (Fig. 3.4A). 31 out of 68 genes associated with chemotaxis were identified. This is the highest measured gene enrichment (EF=7.8) throughout the sigma factor regulon analyses. More specifically, key chemotaxis genes that are targeted by FliA are the operon *cheY*-cheAW*-PA14_02220-*cheR*-cheD*-cheB*, *ctpH**, *aer* as wells as *pctA*, *pctB*, *pctC*, *motAB*, *motCD*, while prominent detected motility and attachment genes are *fliEFGHIJ*, *fliC, fliD* and *flgL* as wells *pilMNOPQ* and *morA*. Surprisingly, genes involved in alginate biosynthesis like *alg8*-*alg44*-*algKEGXL*, *algA* and *algF* as well as the pyoverdine genes *pvdJ*, *pvdD*, *pvdF* are members of this primary regulon. In addition, the primary FliA regulon also includes *fliA* itself indicating auto-regulation of this non-ECF sigma factor as well as *flgM* which encodes the anti-sigma factor of FliA (*197*). The primary FliA regulon encompasses 316 genes (254 TUs) and its size is similar to the size of the alternative sigma factors AlgU and SigX (Fig. 3.4B). Finally, the identified FliA motif (Fig. 3.4C) which relies on 35 promoter regions shows high similarity with the proposed FliA consensus sequence TCAAG-t-$N_{12\text{-}13}$-GCCGATA in *Pseudomonas putida* (*152*).

### 3.2.3 The primary PvdS regulon

In the genus *Pseudomonas*, PvdS is the major ECF sigma factor for iron-acquisition under iron-starvation conditions by orchestrating the production of the siderophore pyoverdine (*145*). Accordingly, key genes like *pvdA*, PA14_33610-*pvdJD*, *pvdE*, *pvdF*, PA14_33730-*pvdNO*, *pvdGL* and *pvdP* as well as the stringent starvation operon *sspAB* were strongly enriched within the PseudoCAP class adaptation/protection (Fig. 3.5A). To capture insoluble $Fe^{3+}$ ions from the environment, pyoverdines must be exported and re-imported upon $Fe^{3+}$ binding. This is consistent with the PvdS-dependent expression of genes which are involved in protein secretion like *exsAB*, *secB*, *cvaB** and *ompK**. PvdS has also been reported to be involved in regulation of virulence-associated genes (*198, 199*). In line with this finding, genes encoding for the endoprotease PrpL (*200*) as well as the exoenzyme ExoT (*201*) and the pyocin killing protein PyoS3A were found to be directly controlled by PvdS. Further prominent regulon members are *pvdS* itself and the transcriptional regulator *toxR*. As a consequence, the categories protein secretion/export apparatus and secreted factors (toxins, enzymes, alginate) are strongly over-represented. Pyoverdines are non-ribosomal peptides and the expression of their large synthetase complexes as well as the transport of pyoverdines coupled to $Fe^{3+}$ ions are energetically expensive processes (*202, 203*). These features are reflected by the moderate enrichment of accessory genes which are associated with energy metabolism, biosynthesis of cofactors and putative enzymes. Strikingly, the overall enrichment profile of the primary PvdS regulon is characterized by the entire absence of seven functional classes. The high specificity is further underlined by the regulon size of only 84 genes corresponding to 59 TUs (Fig. 3.5B). This is the smallest size among the major alternative sigma factors and smaller are only the primary regulons of the other iron-starvation sigma factors FpvI, FecI and FecI2. The uncovered bipartite PvdS binding motif is based on a broad set of 37 selected promoter regions (Fig. 3.5C) and is in good agreement with the previously published consensus sequence TAAAT(A/T)-$N_{15}$-CGTT(C/T)(T/A) in *Pseudomonas syringae* (*204*).

### 3.2.4 The primary RpoH regulon

The alternative sigma factor RpoH was discovered in the context of the heat-shock response in *E. coli* (*107, 139*). Subsequently, the role of RpoH was confirmed in *P. aeruginosa* (*140, 205*) and many other Gram-negative bacteria (*206, 207*). The RpoH-dependent response to elevated temperatures is mediated by heat-shock proteins, chaperones and specific proteases. These important effectors are also required for an adequate response to other stress conditions such as exposure to ethanol, oxidants and UV radiation suggesting that RpoH plays a central role in the direction of maintaining cytoplasmatic homeostasis (*139, 208*). Accordingly, the primary RpoH regulon comprises the key genes *groES-groEL*, *grpE-dnaK*, *dnaJ-dapB*, *ibpA*, *lon*, *clpB*, *clpX*, *htpG*, and *hslVU* which contribute to a strong gene enrichment of the class chaperones/heat shock proteins (Fig. 3.6A). Furthermore, the auto-regulation of *rpoH* could be demonstrated. Surprisingly, there is a high abundance of attachment-associated genes like *pilMNOPQ*, *cupB5*, *cupC3* and genes involved in energy metabolism such as *glgA** (glycogen synthase), *ctaA*B** (cytochrome oxidase assembly proteins) and all 13 genes of the NADH dehydrogenase cluster. Further prominent gene members of the primary RpoH regulon are the post-transcriptional regulator *hfq* and the corresponding GTP-binding protein *hflX* as well as the cell division protein *ftsH*. Despite the pivotal role of RpoH, its primary regulon comprises only 228 genes (136 TUs) and thus is only ranked seventh in size (Fig. 3.6B). The reported RpoH consensus sequence cTTGAA-$N_{13\text{-}16}$-(a/c)CCATat(a/t) in *Vibrio cholerae* (*153*) is in agreement with the elucidated motif which is based on a selection of eleven promoter regions (Fig. 3.6C).

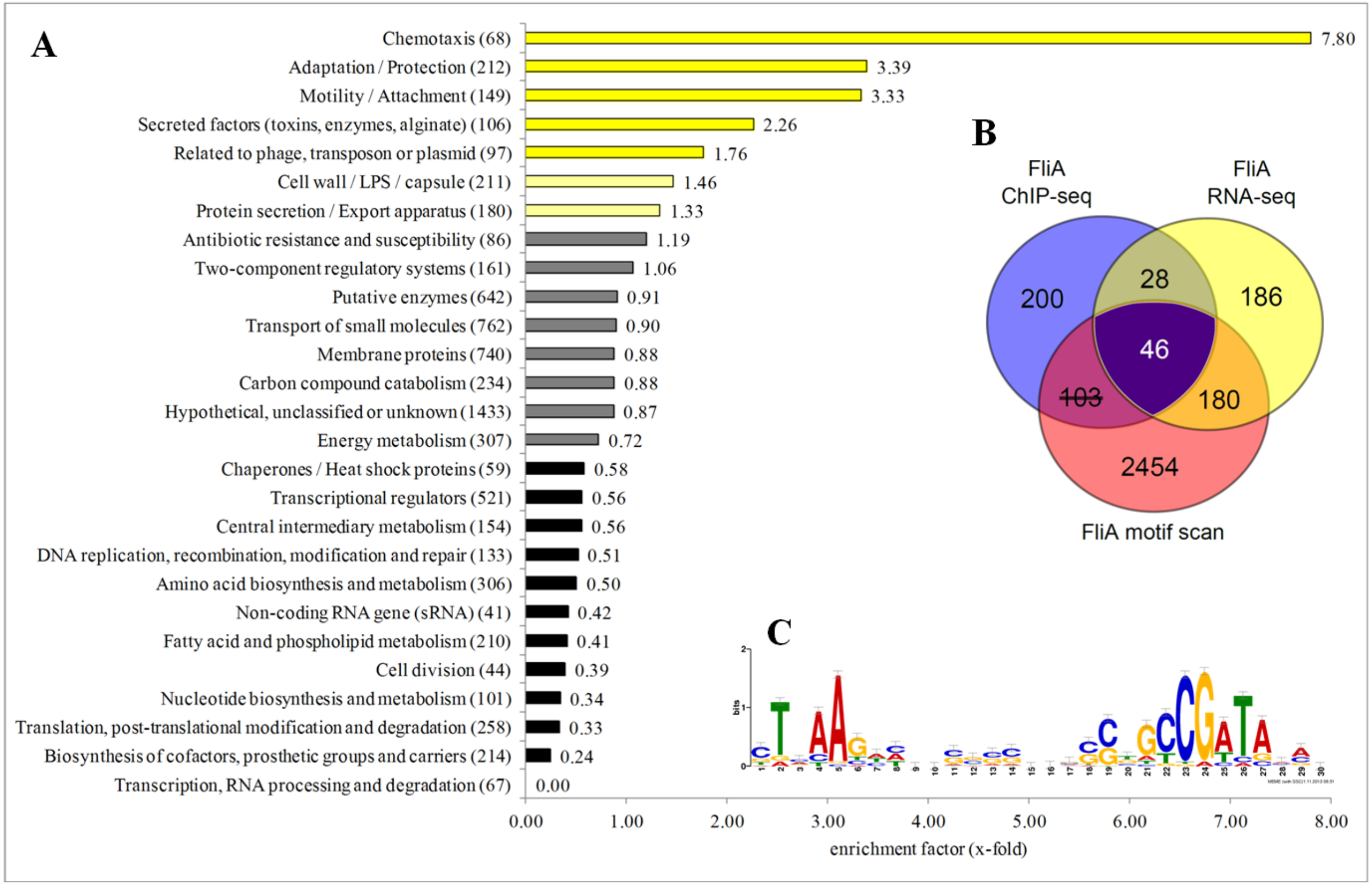



**Fig. 3.4: Analyses of the primary FliA regulon in *P. aeruginosa*.**
**(A)** The PseudoCAP annotation (*185*) was used to categorize and functionally profile the members of the primary FliA regulon and the enrichment of specific gene classes is displayed. Strong and moderate over-represented classes are highlighted in dark and light yellow, while under-represented classes are shown in black. PseudoCAP classes linked to chemotaxis, motility and adaptation show high gene enrichments. **(B)** Quantitative analysis of the primary FliA regulon representing the contribution of ChIP-seq, RNA-seq and motif scan. The intersection ChIP-seq/motif scan was not considered (P value >0.1). **(C)** *de novo* FliA motif elucidation (E value: 2.8e-18) is based on RNA-seq data and TU annotation using the MEME suite (*174*).

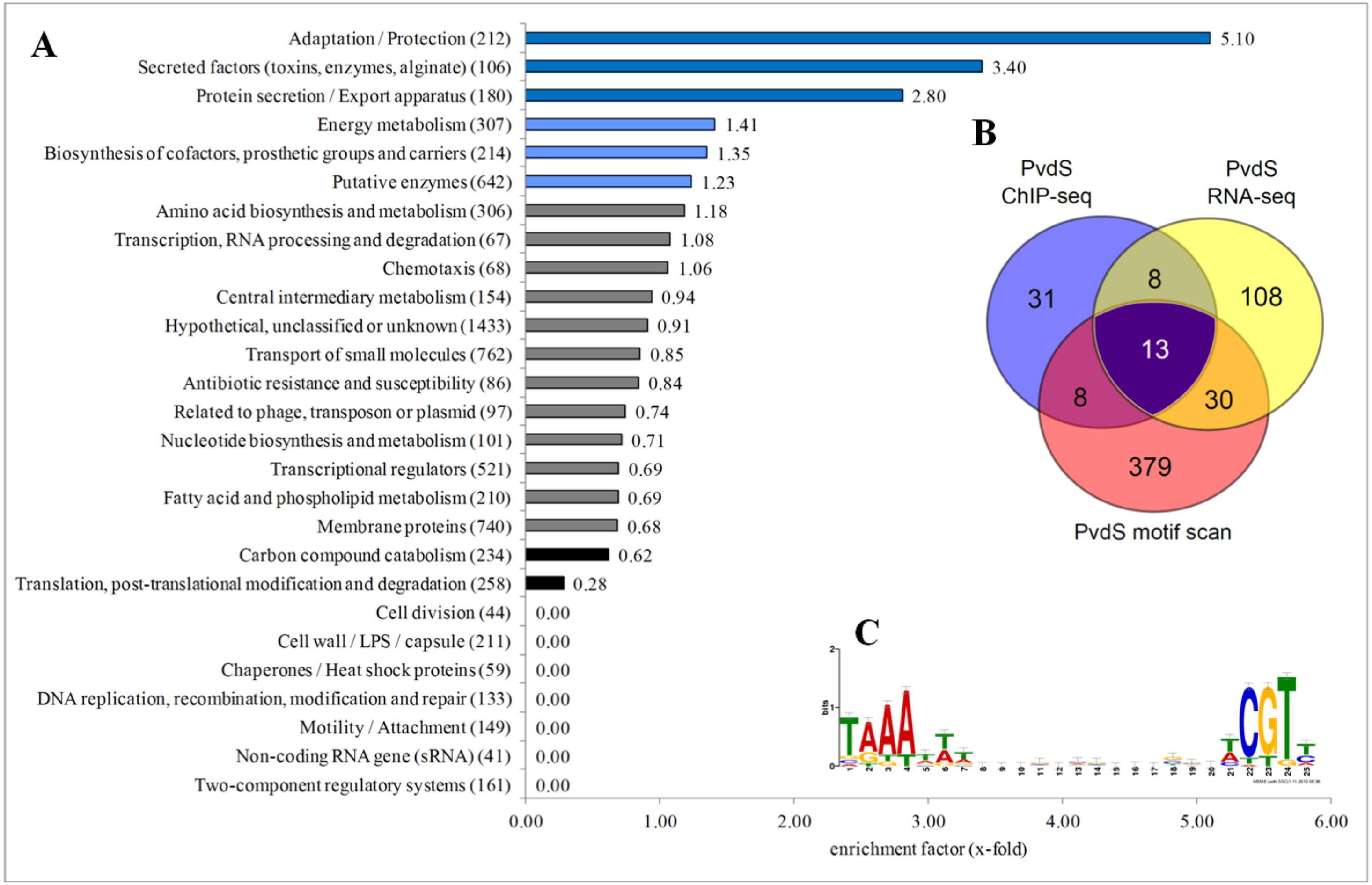



**Fig. 3.5: Analyses of the primary PvdS regulon in *P. aeruginosa*.**
**(A)** The PseudoCAP annotation (*185*) was used to categorize and functionally profile the members of the primary PvdS regulon and the enrichment of specific gene classes is displayed. Strong and moderate over-represented classes are highlighted in dark and light blue, while under-represented classes are shown in black. PseudoCAP classes involved in adaptation/protection and secretion were clearly over-represented. **(B)** Quantitative analysis of the primary PvdS regulon representing the contribution of ChIP-seq, RNA-seq and motif scan. **(C)** *de novo* PvdS motif elucidation (E value: 2.6e-21) is based on RNA-seq data and TU annotation using the MEME suite (*174*).

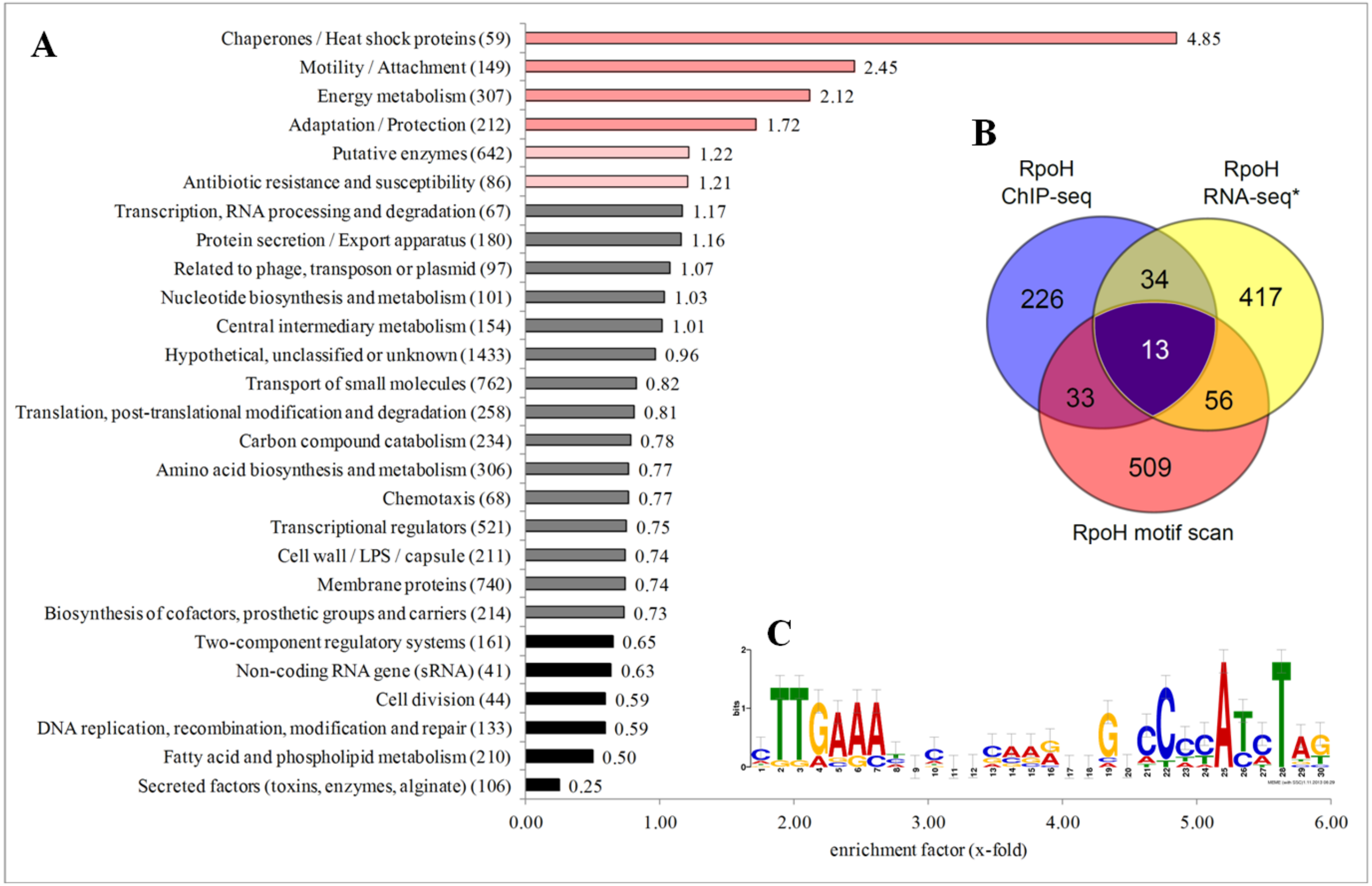



**Fig. 3.6: Analyses of the primary RpoH regulon in *P. aeruginosa*.**
**(A)** The PseudoCAP annotation (*185*) was used to categorize and functionally profile the members of the primary RpoH regulon and the enrichment of specific gene classes is displayed. Strong and moderate over-represented classes are highlighted in dark and light pink, while under-represented classes are shown in black. PseudoCAP classes which are involved in / affected by the heat-shock response exhibit high gene enrichment. **(B)** Quantitative analysis of the primary RpoH regulon representing the contribution of ChIP-seq, RNA-seq and motif scan. *As *rpoH* is an essential gene, RNA-seq data derive from hyper-expressing strain only. **(C)** *de novo* RpoH motif elucidation (E value: 9.3e-05) is based on RNA-seq data and TU annotation using the MEME suite (*174*).

### 3.2.5 The primary RpoN regulon

RpoN was shown to impact on the transcriptional control of nitrogen-regulated and nitrogen-fixation promoters (*141, 209*). Accordingly, key genes like *rpoN* itself (formerly *glnF* or *ntrA*), *ntrBC*, *glnA* (glutamine synthetase), *glnK-amtB* as well as *nirBD*, *nasA*, *nasST* and the operon *nosRZDFYL* are prominent nitrogen-associated members of this primary regulon. Nucleotides include nitrogen-rich bases and consequently RpoN controls the regulation of genes assigned to nucleotide biosynthesis and metabolism (Fig. 3.7A). Moreover, early studies reported that RpoN is required for the expression of flagellin and pilin genes (*142*, *143*). Consistently, the uncovered primary regulon includes genes of the *fli* and *flg* cluster namely *fliD*, *fliEFGHIJ*, *fliL*MNOPQR* and *fliS* as well as *flgA*, *flgBCDE* and *flgFGHIJKL*. Strikingly, the gene *fliC* which encodes the monomeric subunit of flagella is not directly controlled by RpoN. Further prominent RpoN target operons are *flhAF* and *fleSR*. As a result, the categories chemotaxis and motility/attachment exhibit strong gene enrichments. In total, RpoN controls 53 genes which are associated with translation, post-translational modification and degradation like the cluster *rpl*, *rps* and *rpm* and further well-known genes such as *rbfA* (ribosome-binding factor A), *infB* (initiation factor) and *tsf* (elongation factor). Key players among the categories with moderate gene enrichment are *ureDA*, *ureBC* as well as *glpD*, *musED*, *phaC1* and *phaC2* (central intermediary metabolism), the *pel* operon *pelABCDEFG* (cell wall/LPS/capsule) and the *psc* cluster (protein secretion/export apparatus). In particular, genes from the type III secretion system reinforce statements of previous studies linking RpoN and bacterial pathogenicity beyond flagellum synthesis (*210, 211*). In addition, recent reports could also demonstrate a direct connection of RpoN to the type VI secretion system (*212-214*). Strikingly, in this study RpoN is the only sigma factor that shows an enrichment of non-coding RNA genes. In total, seven out of 41 small non-coding regulatory RNAs (*P7*, *P11*, *P26*, *P30*, *P36*, *ccoQ1*, *crcZ*) are under direct control of RpoN. Further interesting RpoN targets are the virulence factor regulator gene *vfr*, the anaerobically-induced genes *anr* and *oprE* (*215*) as well as quorum sensing related genes *rhlA*, *rhlB* and *rhlR* and the sensor kinase gene *kinB* (*216*). Early studies in *P. putida* revealed that RpoN regulates genes affecting various metabolic functions (*217, 218*) and indeed the overall functional profile of the primary RpoN regulon is very broad with only the two under-represented categories cell division and genes related to phage, transposon or plasmid. With 680 genes (522 TUs) the primary RpoN regulon has the largest size among all alternative sigma factors (Fig. 3.7B) and is only outnumbered by the house-keeping sigma factor RpoD. These results underline the exceptional role of RpoN which represents a second sigma factor family with unique properties in addition to the RpoD-like

$\sigma^{70}$-family (*118*). One of the many special features of RpoN is its unique promoter recognition sequence. In contrast to the $\sigma^{70}$ family with its -35 and -10 elements, RpoN scans for conserved GG and GC elements located -24 and -12 nucleotides upstream from the transcriptional start site (*117*). The identified RpoN motif (Fig. 3.7C) confirms the proposed consensus sequence TGGca-$N_{4\text{-}5}$-ttGCaa which was deduced from ChIP-chip experiments in *E. coli* (*154*).

### 3.2.6 The primary RpoS regulon

RpoS was firstly identified in *E. coli* during carbon-starvation-induced entry into the stationary growth phase (*219*). The same study also demonstrated that the sigma factor RpoS is required for an adequate response to several stressors like acidicity, $H_2O_2$ and heat shock. Furthermore, RpoS was also found to be important for the general stress response in *P. aeruginosa*, although stress sensitivity was less pronounced than in *E. coli* (*220*). Moreover, RpoS was linked to the quorum sensing circuit adding a further layer of the complexity to the global regulatory network architecture (*144, 221*). To obtain a global view, the RpoS regulon in *P. aeruginosa* was eventually identified by microarray-based transcriptional profiling at different growth stages (*155*). As indicated in this study, our integrative approach (Fig. 3.8A) identified strong gene enrichments within the functional categories chemotaxis (10 genes) and two-component regulatory systems (15 genes). The primary RpoS regulon also includes many genes of putative pilus assembly proteins (motility/attachment) and of the putative type II secretion system (protein secretion/export apparatus). In line with the role of RpoS as the general stress response regulator, the category adaptation/protection shows significant gene enrichment, while the direct impact of RpoS is strongly reduced in classes which are needed under beneficial growth conditions. Further interesting RpoS regulon members are the origin of replication operon *dnaAN-recF-gyrB*, the cytochrome-c related operons *coxBA*G*-*coIII* and *napEFDABC* as well as genes of the succinate dehydrogenase subunits *sdhCDAB*, the DNA repair proteins *recO* and *radC* and the exonuclease *sbcDC* highlighting the contribution of RpoS to switching energy metabolism and supporting DNA replication, recombination, modification and repair, respectively. RpoS also targets itself as well as the transcriptional regulators *rhlR* and *rsmA* which were linked to quorum sensing and carbon storage regulation, respectively. The primary RpoS regulon size of 272 genes (172 TUs) is surprisingly small considering its role and status as principal-like sigma factor. The RpoS regulon analysis also includes ChIP-chip results which are highlighted by the strong overlay of ChIP approaches and motif scan (Fig. 3.8B). The RpoS motif comprises a -10 element only and the elucidated motif (Fig. 3.8C) confirms the proposed consensus sequence CTATACT (*155*).

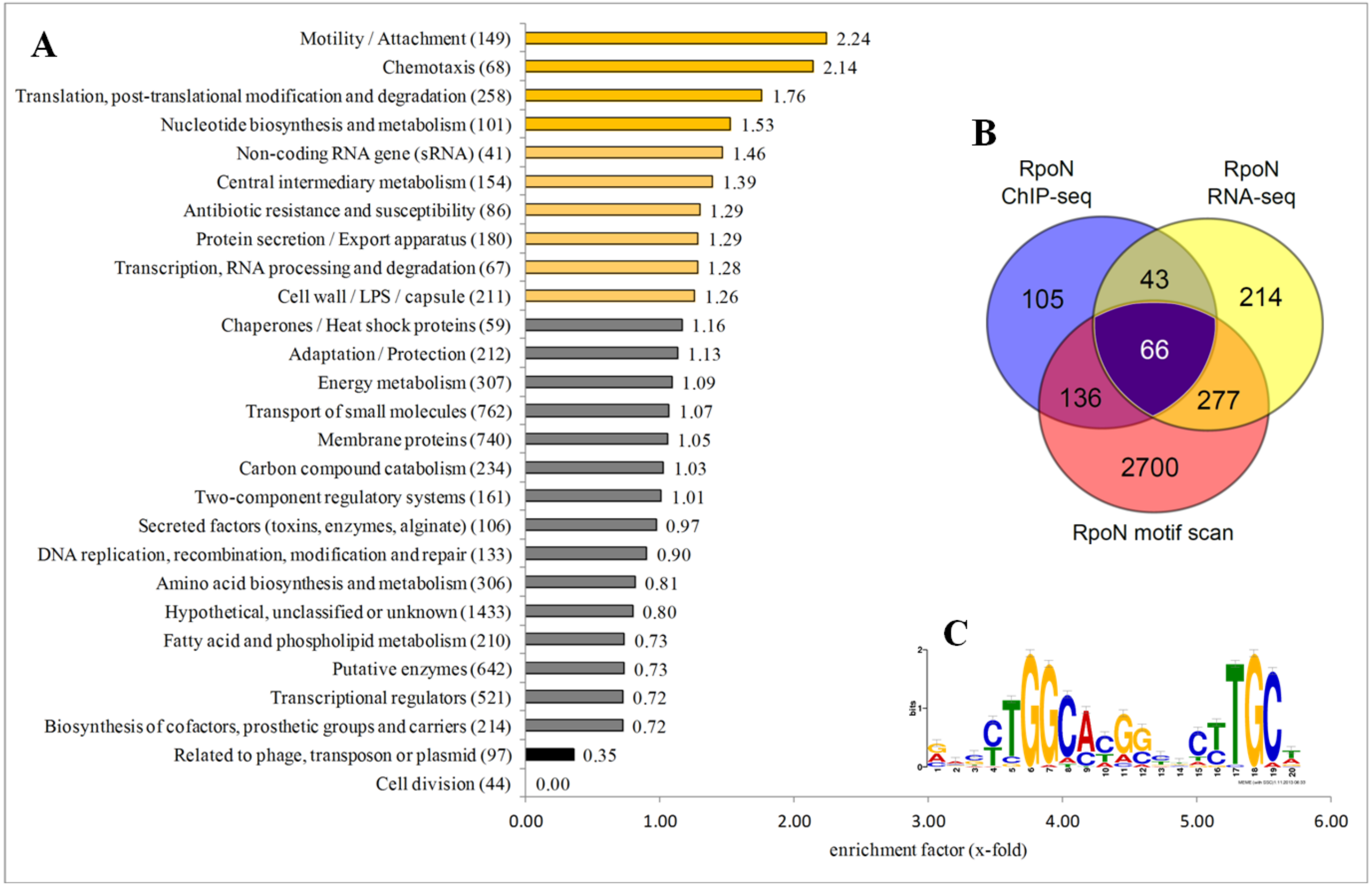



**Fig. 3.7: Analyses of the primary RpoN regulon in *P. aeruginosa*.**
**(A)** The PseudoCAP annotation (*185*) was used to categorize and functionally profile the members of the primary RpoN regulon and the enrichment of specific gene classes is displayed. Strong and moderate over-represented classes are highlighted in dark and light orange, while under-represented classes are shown in black. RpoN target genes are widespread regarding functional classes. PseudoCAP categories associated with chemotaxis, motility/attachment and nitrogen metabolism show strong over-representation. **(B)** Quantitative analysis of the primary RpoN regulon representing the contribution of ChIP-seq, RNA-seq and motif scan. **(C)** *de novo* RpoN motif elucidation (E value: 1.3e-35) is based on RNA-seq data and TU annotation using the MEME suite (*174*).

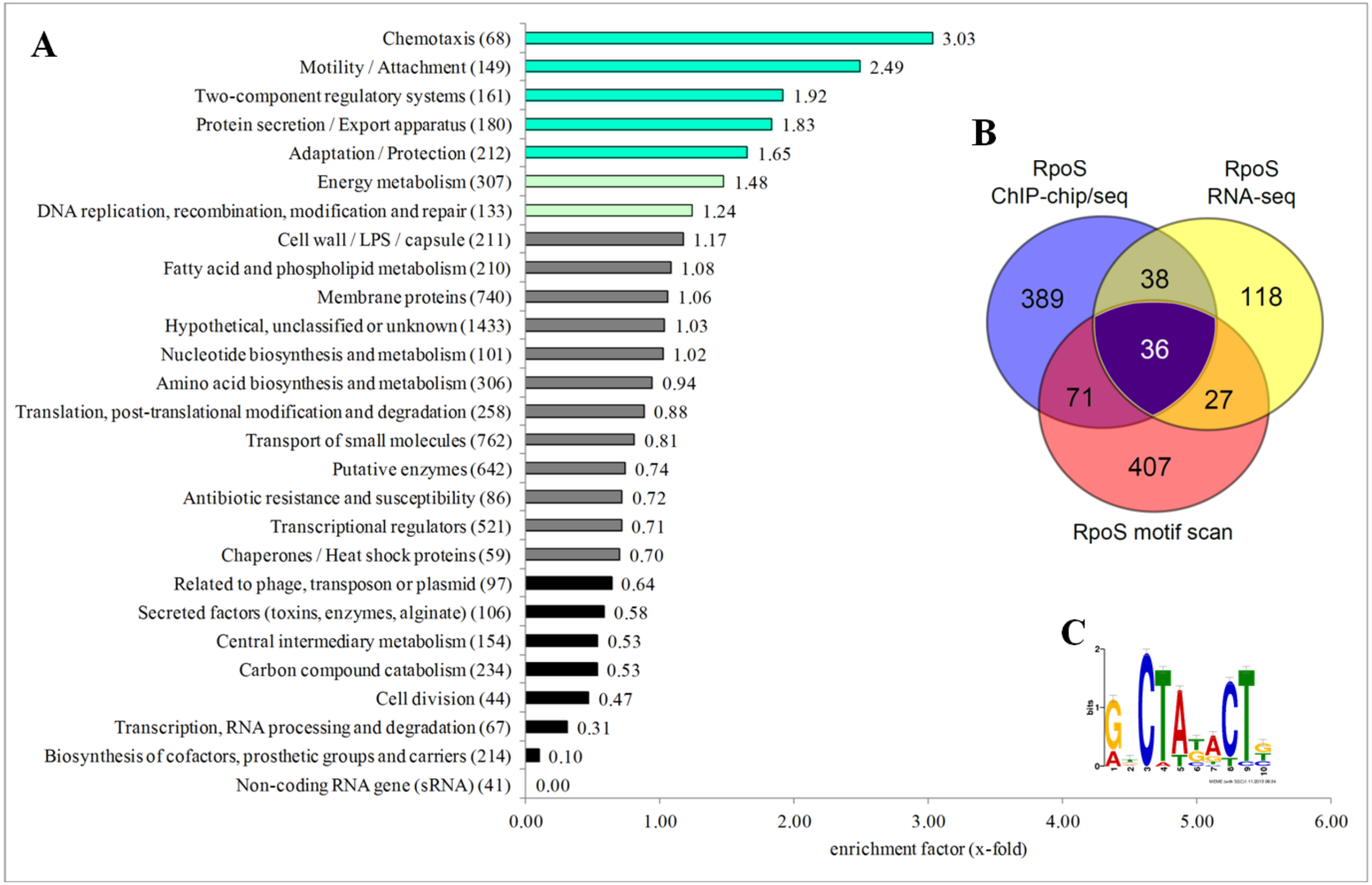



**Fig. 3.8: Analyses of the primary RpoS regulon in *P. aeruginosa*.**
**(A)** The PseudoCAP annotation (*185*) was used to categorize and functionally profile the members of the primary RpoS regulon and the enrichment of specific gene classes is displayed. Strong and moderate over-represented classes are highlighted in dark and light turquoise, while under-represented classes are shown in black. Over-represented PseudoCAP classes are linked to chemotaxis, motility and the general stress response. **(B)** Quantitative analysis of the primary RpoS regulon representing the contribution of ChIP-seq, RNA-seq and motif scan. In addition, RpoS ChIP-chip data were kindly provided by Sebastian Bruchmann and Juliane Düvel and were included (*186*). **(C)** *de novo* RpoS motif elucidation (E value: 6.5e-10) is based on RNA-seq data and TU annotation using the MEME suite (*174*).

### 3.2.7 The primary SigX regulon

The ECF sigma factor SigX was discovered in the context of its regulatory effect on the major outer membrane protein OprF (*222*). In the same study, growth analysis in different media also suggested that osmolarity is one but not the only stressor for SigX activation. Later, the significance of SigX under low NaCl or high sucrose concentrations was confirmed by reporter assays based on promoter-*luxCDABE* fusions (*148*, *223*). Recently, two studies on SigX regulon were published, one based on transcriptome data in the PAO1 strain only (*149*) and one also includes ChIP-seq and predicted binding sites in a PA14 background (*148*). In the latter study, we focused on the identification of the primary SigX regulon and the corresponding ChIP-seq and RNA-seq data were also included in this regulon analysis. Surprisingly, with 347 genes (265 TUs) the primary SigX regulon size is ranked third behind RpoD and RpoN and before the well-characterized sigma factors AlgU, FliA and RpoS (Fig. 3.9B). Despite the integrative approach, the obtained SigX motif shows only low sequence conservation (Fig. 3.9C). Interestingly, seven out of nine over-represented PseudoCAP categories in our study are also enriched according to Gicquel and colleagues (*149*) assuming a coverage threshold of >7,5% (Fig. 3.9A). Notably, there is a strong enrichment for genes involved in secretion pathways like members of the type III secretion system *pscBCDEFGHIJKL*, *exsA*, *exsC*-PA14_42410-*exsB* and the two phenazine cluster *phzB1C1D1E1F1G1* and *phzB2E2F2G2* as well as genes linked to energy metabolism like the cytochrome c oxidase subunits *coxBA*G*-*coIII*, the ATP synthase chains *atpEFHAGDC* and *nirN*, *nirD1** and *nirS*. Most strikingly, genes associated with fatty acid and phospholipid metabolism like *accA*, *accBC*, *fabAB*, *fabD*, *fabH2*, *fabH-2**, *fabZ* and the methyltransferase gene *pmtA* were preferentially targeted by SigX. This reinforces our previous results that the *sigX* mutant strain exhibited an altered fatty acid composition which in turn provides an explanation for its unique cell morphology. The *oprF* promoter was immunoprecipitated, but due to stringent cut-off value setting (fold change ≥3) *oprF* was not considered to be a regulon member (fold change = 2.76, P value = 0.009). The primary SigX regulon analysis has also revealed the control of 30 genes linked to translation, post-translational modification and degradation. The majority of 17 genes encodes for ribosomal protein, followed by the tRNA-synthetases GlyQ, GlyS, TyrZ and LysS as well as the ribosome-binding factor A RbfA. Finally, SigX directly regulates the three genes *ftsL*, *mesJ** and PA14_23890 which are associated with cell division and may provide an explanation for the impaired growth of the *sigX*-mutant strain during the exponential growth phase (*148*, *222*).

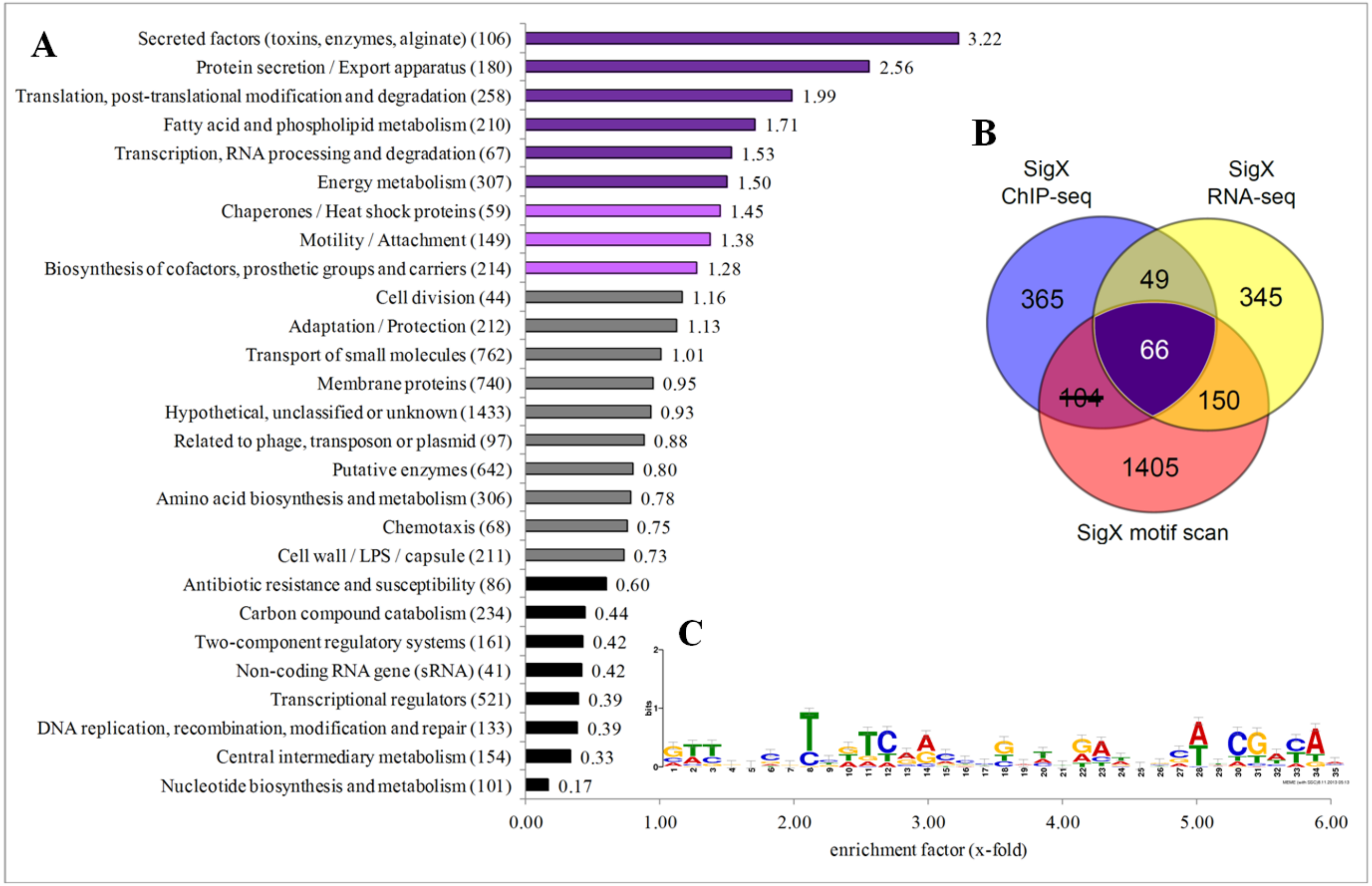



**Fig. 3.9: Analyses of the primary SigX regulon in *P. aeruginosa*.**
**(A)** The PseudoCAP annotation (*185*) was used to categorize and functionally profile the members of the primary SigX regulon and the enrichment of specific gene classes is displayed. Strong and moderate over-represented classes are highlighted in dark and light violet, while under-represented classes are shown in black. Categories associated with secretion, fatty acid/phospholipid metabolism and translation are preferentially targeted by SigX. **(B)** Quantitative analysis of the primary SigX regulon representing the contribution of ChIP-seq, RNA-seq and motif scan. The intersection ChIP-seq/motif scan was not considered (P value >0.1). **(C)** *de novo* SigX motif elucidation (E value: 7.0e-107) is based on genes which are the first gene of a transcriptional unit and whose promoter were hit in ChIP-seq (promoter enrichment ≥3) and RNA-seq approaches using the MEME suite (*174*).

### 3.2.8 The primary RpoD regulon

In 1969, RpoD was identified as a sigma factor which is mandatory to stimulate transcription by the RNA polymerase in *E. coli* (*32*). As the principal sigma factor, RpoD is involved in the expression of genes associated with house-keeping processes (*130*). Accordingly, prominent gene members of the identified primary regulon are *dnaA* (chromosomal replication initiator protein), *dnaN* (DNA polymerase III), *recF* (DNA replication and repair protein), *gyrB* and *gyrA* (DNA gyrase subunits), *dnr* (transcriptional regulator), *rsmA* (regulator of secondary metabolites), *ffh* (signal recognition particle protein), *rmf* (ribosome modulation factor), *mfd* (transcription-repair coupling factor), *rne* (ribonuclease E), *etfA* and *etfB* (electron transfer flavoproteins), *fadA* and *fadB* (fatty acid oxidation complex), *infA* (translation initiation factor IF-1), *prfA* (peptide chain release factor 1), *hfq* (putative host factor-I protein), *fur* (ferric uptake regulation protein), *fdxA*, *grx* and *trxA* (redoxin proteins) and the small regulatory RNAs *rsmY*, *rsmZ*, *rgsA*, *phrS*, *phrY*, P32 and *ssrS* as well as *rpoD* itself. The significance of RpoD is further underlined by its large impact on global regulation of gene expression in respect to quantity amounting to 867 genes corresponding to 526 TUs (Fig. 3.10B) as well as in respect to quality reflected by its broad functional profile (Fig. 3.10A). Transcription of *rpoD* is most dominant during the exponential growth phase and driven from two promoters, one constitutive active and one transiently induced upon heat shock (*23*, *224*). In contrast to RpoH, the RpoD-dependent over-representation of the category chaperones/heat shock proteins is mainly related to the high amount of chaperones like the isomerases SurA, PpiD, Fkl*, FkbP-1*, PpiC1, DsbB, DipZ2*, DsbG and PA14_32600 (Fig. 3.10A). This study reveals that RpoD-dependent gene regulation provides the basal import/export infrastructure by controlling the general secretion pathway operons *xcpPQ* and *xcpRSTUVWXYZ* as well as *secG*, *secB*, *secDF*, *tatBC* and the cluster of the type II and III secretion system *hplRSTUVW** and *popN-pcr1234*-pcrDRGVH-popBD* respectively. Interestingly, genes which are related to phage, transposon or plasmid show strong preference for RpoD indicating phage adaptation to the host. Consistent with its house-keeping function, RpoD preferentially targets genes linked to amino acid biosynthesis and metabolism, cell wall components, secreted factors and translation, post-translational modification and degradation. Surprisingly, the RpoD regulon analysis features less genes associated with the cell cycle than anticipated. Finally, the highly specialized functional classes chemotaxis and motility/attachment governed by the sigma factors FliA, RpoN and RpoS as well as two-component regulatory systems mainly directed by RpoS are found to be strongly under-represented within the primary RpoD regulon.

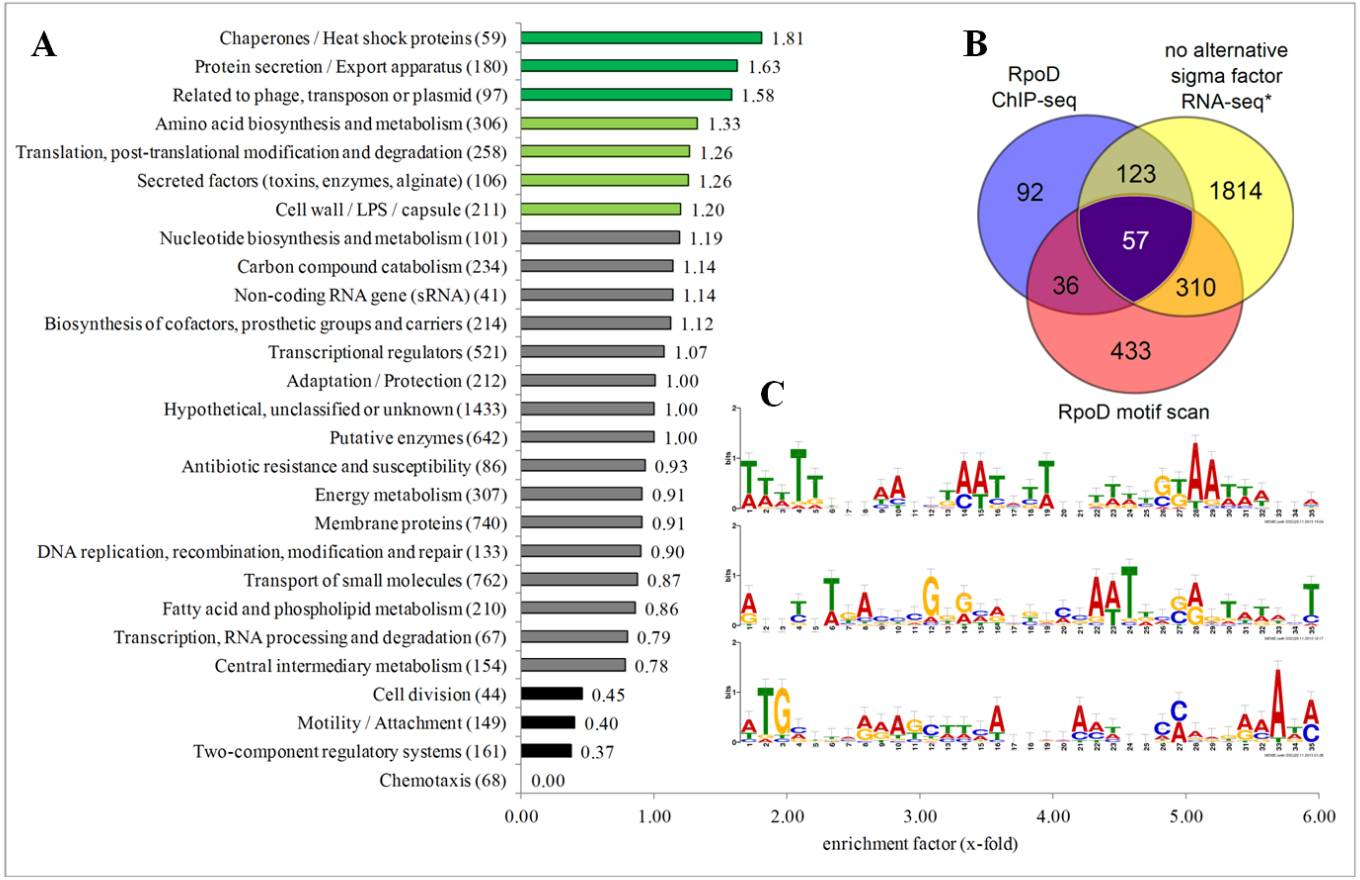



**Fig. 3.10: Analyses of the primary RpoD regulon in *P. aeruginosa*.**
**(A)** The PseudoCAP annotation (*185*) was used to categorize and functionally profile the members of the primary RpoD regulon and the enrichment of specific gene classes is displayed. Strong and moderate over-represented classes are highlighted in dark and light green, while under-represented classes are shown in black. RpoD exhibits a broad impact on global gene expression and over-represented classes are linked to basic processes. **(B)** Quantitative analysis of the primary RpoD regulon representing the contribution of ChIP-seq, RNA-seq and motif scan. *As *rpoD* is an essential gene and *rpoD* hyper-expression showed no impact, RNA-seq input is based on first genes of transcriptional units which show no differential expression according to alternative sigma factors**. **(C)** *de novo* identified top three RpoD motifs (E values: 2.5e-33, 1.7e-04, 6.8e-05 in reading order) are based on ChIP-seq (EF ≥5) and TU-filtered primary non-alternative sigma factor regulon members using the MEME suite (*174*).

### 3.2.9 The primary FpvI, FecI and FecI2 regulon

The primary regulon sizes of FpvI (12 genes), FecI (17 genes) and FecI2 (19 genes) are the smallest among all investigated sigma factors (Fig. 3.11A).

FpvI plays an important role in pyoverdine-mediated iron-acquisition by regulating the gene expression of the ferric pyoverdine receptor *fpvA* (*146*). Interestingly, FpvI shares the same anti-sigma factor FpvR as PvdS (*225*). Accordingly, prominent members of the primary FpvI regulon are *fpvI* itself, its corresponding receptor *fpvA*, the L-ornithine N5-oxygenase *pvdA*, the haem uptake outer membrane receptor *hasR* and the small non-coding RNA *prrF1*.

FecI (PA14_13460) is the only iron-starvation sigma factor known in *E. coli* and has been assigned to the uptake of ferric citrate (*147*) by controlling the transcription of the *fecABCDE* operon (*226*). In contrast to *E. coli*, this regulon analysis indicated auto-regulation of *fecI* in *P. aeruginosa*. Further key players of the primary FecI regulon are *hasR*, *pvdA*, the putative TonB-dependent receptor *cirA**, the outer membrane protein *oprG*, polyamine ABC transporter *potD* and the ABC transporter component *ybeJ**.

The ECF sigma factor FecI2 (PA14_27690) is commonly present in *P. aeruginosa*, however not in all strains, e.g. it is missing in the PAO1 type strain (*35*). A virulence assay with 19 *P. aeruginosa* strains revealed that *fecI2* was within the PA14-specific region which showed the highest correlation to *Caenorhabditis elegans* killing (*17*). Accordingly, the FecI2 regulon encompasses iron-starvation and virulence-related genes such as *fecI2* itself, the transcriptional regulator *pchR*, the haem acquisition and utilization genes *hasR*, *hasAp*, *phuR* and *hxuC**, the putative TonB-dependent receptor *fecA** and the alternative sigma factor *pvdS*.

The identified motifs of all three sigma factors (Fig. 3.11B) are AT-rich. This result is particularly characteristic for iron-starvation target promoters which harbor the so-called ‘iron box’ and are under control of the ferric uptake regulator Fur with its binding motif 5’-GATAATGATAATCATTATC-3’ (*227*).

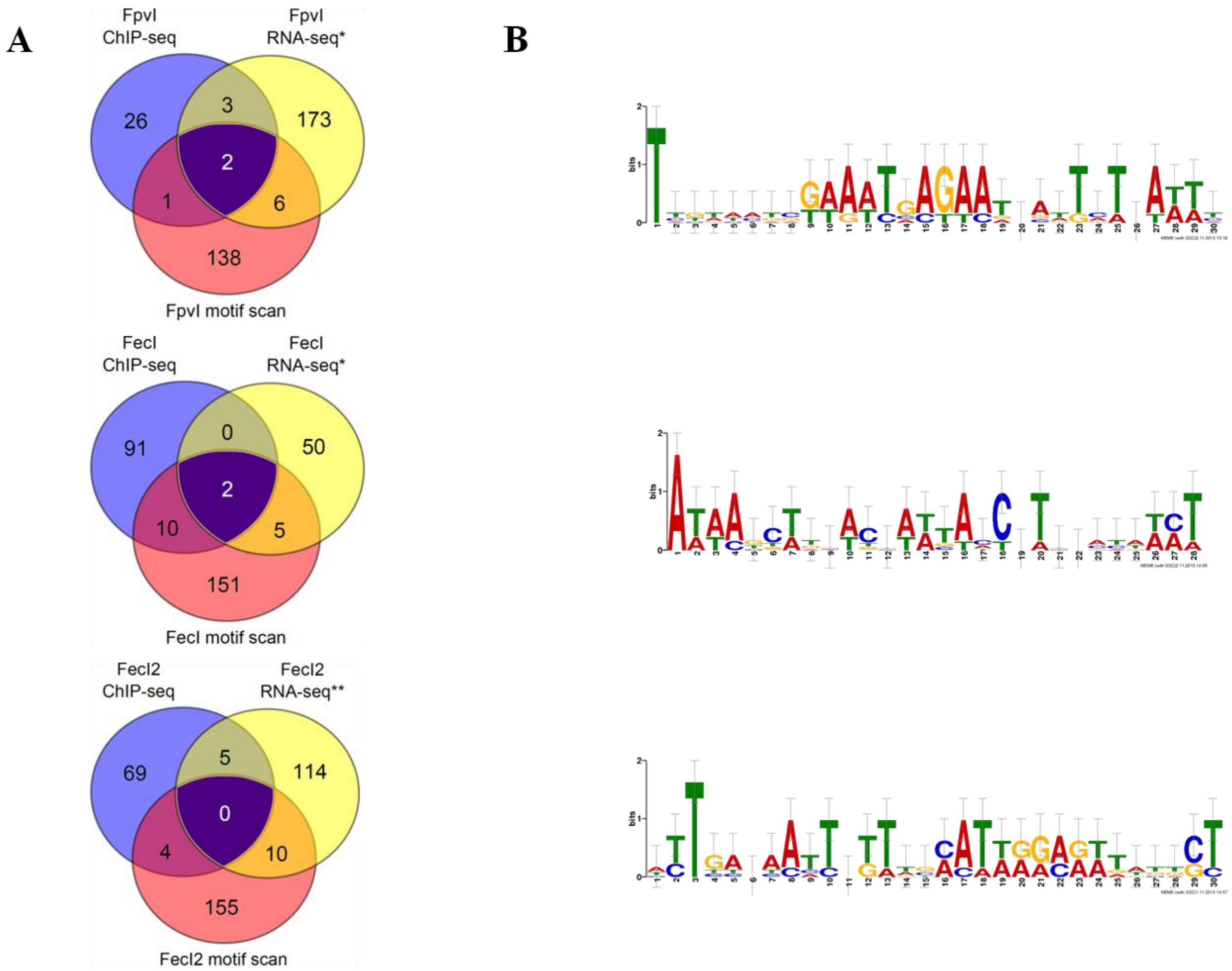



**Fig. 3.11: Analyses of the primary FpvI, FecI and FecI2 regulon in *P. aeruginosa*.**
**(A)** Quantitative analysis of the primary FpvI, FecI and FecI2 regulon representing the contribution of ChIP-seq, RNA-seq and motif scan. *For the comparison mutant vs. wild-type strain the thresholds are set to fold change of at least 2 with an uncorrected P value of maximal 0.05. **FecI2 RNA-seq data derive from hyper-expressing strain only. **(B)** *de novo* identified FpvI, FecI and FecI2 motifs (E values: 4.5e-04, 3.2e+00 and 1.4e-05 in reading order) is based on RNA-seq data and TU annotation using the MEME suite (*174*).

## 3.3 The *P. aeruginosa* strain PA14 sigma factor regulome

The individual primary sigma factor regulons were integrated to the primary sigma factor regulome (‘sigmulome’) of the *P. aeruginosa* strain PA14 (Fig. 3.12). The twelve most frequent direct sigma factor cross talks are displayed in the center. In total, the uncovered primary sigmulome encompasses 2553 genes including 598 genes of unknown function and thus provides new information on numerous poorly characterized genes.

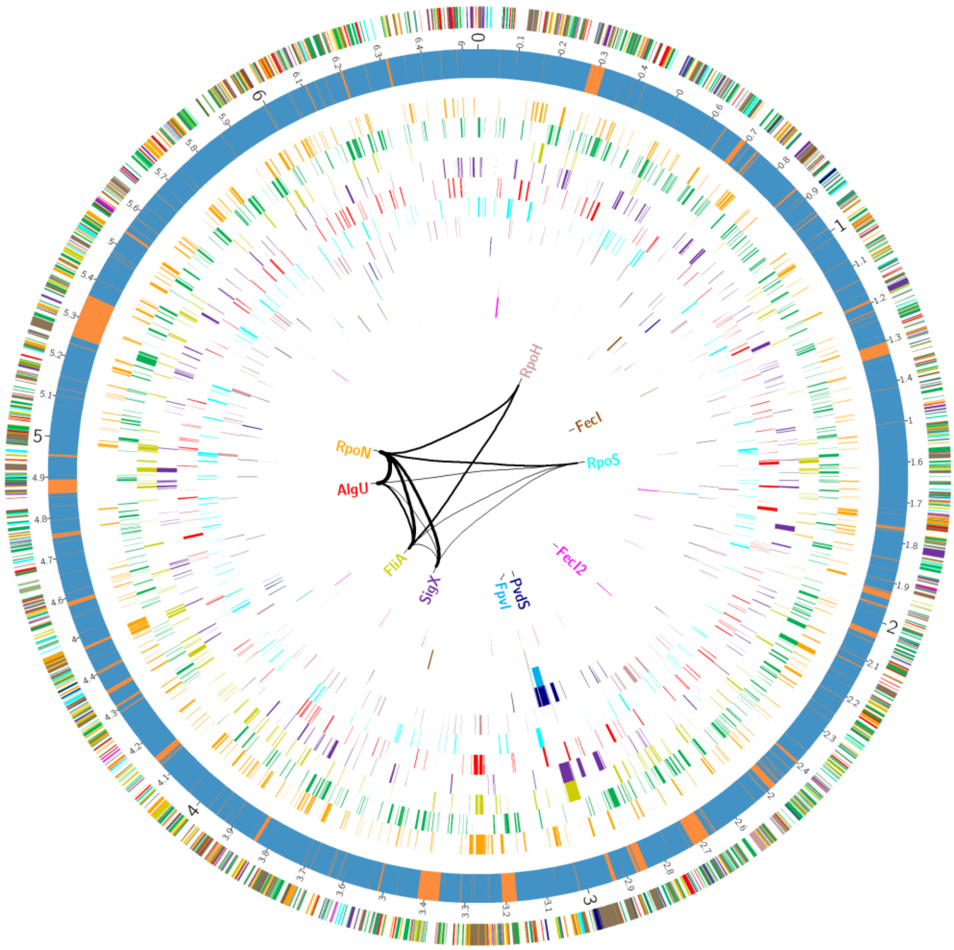



**Fig. 3.12: The *P. aeruginosa* strain PA14 sigma factor regulome (‘the sigmulome’).**
The outer circle summarizes the distribution of the 2553 genes belonging to the primary PA14 sigmulome including the primary regulon of ten alternative sigma factors and RpoD (green). Genes of distinct regulons are highlighted in the respective colors; those genes that belong to more than one primary sigma factor regulon are indicated in brown. The second circle represents the PA14 core (blue) and accessory (orange) genome as previously defined (*228*). The inner eleven circles highlight the genes associated with individual sigma factor primary regulons. The central diagram depicts the top twelve direct cross talks between sigma factors as extracted from the primary sigmulome and RNA-seq data. The line thickness is scaled according to the number of genes associated with the particular cross talk. This figure was generated and kindly provided by Denitsa Eckweiler using Circos (*169*).

## 3.4 The cross talk of sigma factor-associated networks

Beyond the pure assignment of genes to specific sigma factor regulons, the experimental design of this study offered the possibility to define sets of genes that are affected by more than one sigma factor either directly or indirectly. As many as 1149 genes (61.5 % of the primary alternative sigmulome) could be assigned to one distinct sigma factor regulon. Whereas those genes were exclusively affected by one sigma factor and did not participate in sigma factor cross talk, 401 genes belonged to the primary regulon of more than one sigma factor (direct cross talk) and 317 genes belonged to the primary regulon of one sigma factor, but were additionally affected by the activity of a second alternative sigma factor (indirect cross talk) (Fig. 3.13).

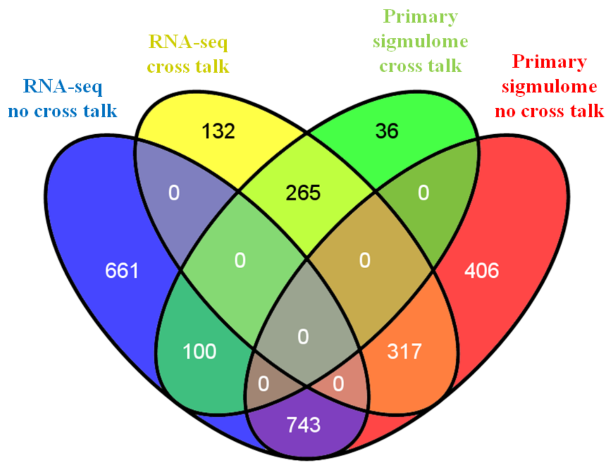



**Fig. 3.13: Sigma factor cross talk candidates.** Venny (*179*) was used to differentiate no (743+406), direct (265+36+100) and indirect (317) cross talk.

Functional profiling of these genes revealed for 17 out of 27 PseudoCAP categories moderate or no gene enrichment (EF <1.5) (Fig. 3.14**)**. Genes involved in the indirect cross talk show an exclusive enrichment in central cellular and metabolic processes indicating that cells are able to fine-tune expression levels of the most critical genes under various conditions via the activity of diverse sigma factors. Direct cross talk was mainly found to involve genes of the functional categories adaptation/protection, chaperones/heat shock proteins, chemotaxis, motility/attachment, protein secretion and secreted factors.

In addition, it was analyzed whether there is a preference of sigma factor combinations within the cross talk (Fig. 3.15). Strikingly, the twelve most frequent direct sigma factor cross talks are exclusively assigned to two sigma factor regulons which reinforces the high specificity of the sigma factor cross talk. Thereby, direct cross talk with RpoN clearly played the most dominant role. 183 out of the 401 genes affected by direct cross talk were found to be activated by RpoN in combination with either AlgU (51 genes), FliA (43 genes), SigX (40 genes), RpoH (26 genes) or RpoS (23 genes) (Fig. 3.15) which underlines the exceptional role of RpoN as previously described (3.2.5).

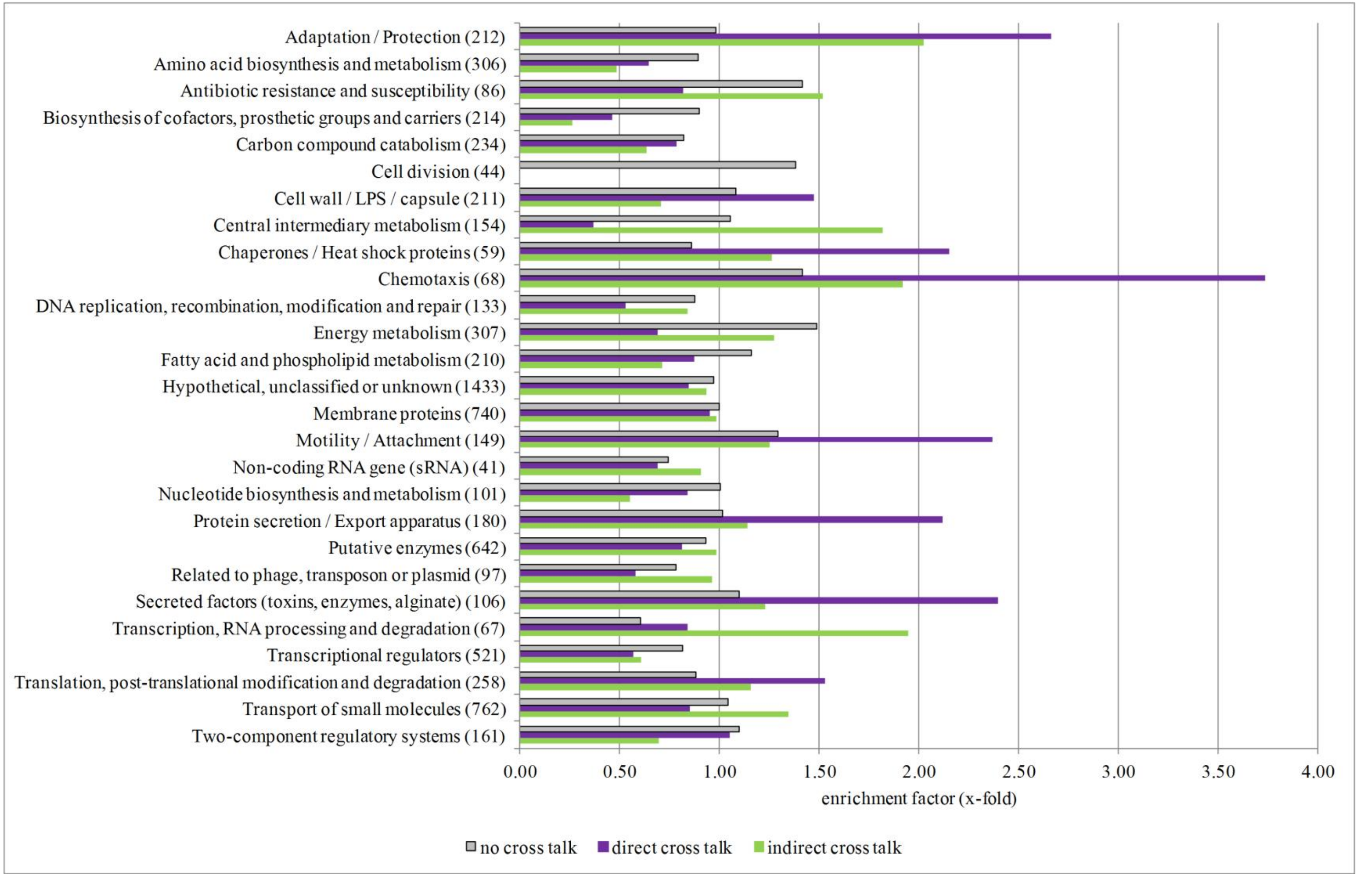



**Fig. 3.14: Functional profiling of the sigma factor cross talk in *P. aeruginosa*.**
The PseudoCAP annotation (*185*) was used to categorize the members of the direct (violet bars) and indirect (light green bars) sigma factor cross talk as well as members which are targeted by a single sigma factor only (grey bars). The gene enrichment of each functional category is displayed.

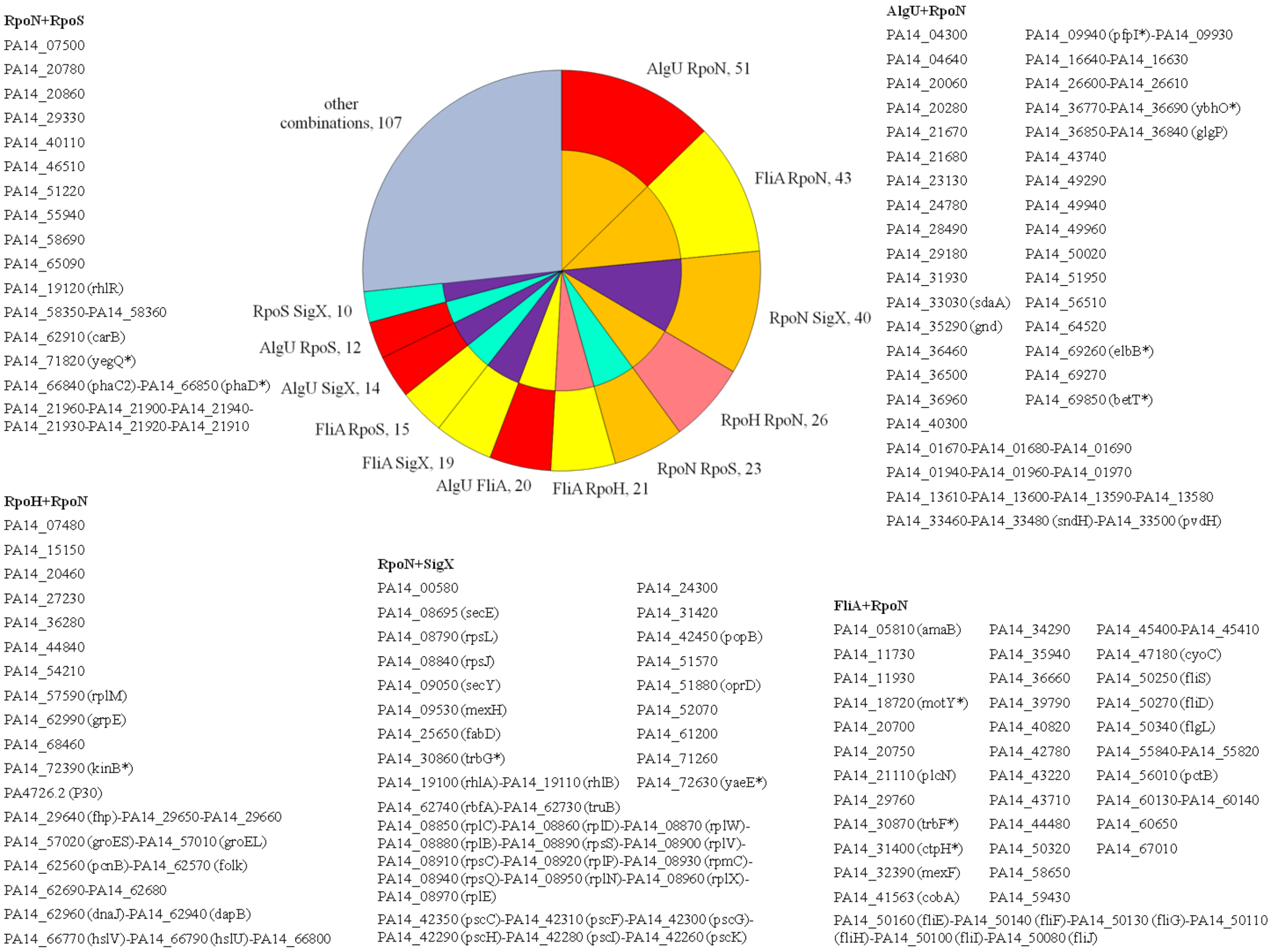



**Fig. 3.15: Preferred sigma factor combinations within the direct cross talk in *P. aeruginosa*.**
The contribution of alternative sigma factors to the twelve most abundant sigma factor combinations within the direct cross talk is illustrated. The target genes of the five most abundant sigma factor pairs are further specified.

## 3.5 Transcription factors provide selective connectivity of alternative sigma factor regulons

It was further explored how the discrete functional modules of the various sigma factors increase their connectivity in the face of new and changing habitats. The functional state of the sigma factor network was therefore investigated by transcriptional profiling of the PA14 wild-type grown under 14 different environmental conditions that have in part been analyzed previously (*148*, *166*, *183*). These included growth within biofilms, at various temperatures, osmolarities and phosphate concentrations, under anaerobic conditions, attached to a surface and conditions encountered within the eukaryotic host (see Tab. 5.1 for detailed information).

Overall, 3153 genes were found to be differentially regulated (2.2.2) of which 769 have been assigned to a specific alternative sigma factor regulon (Fig. 3.16A). Interestingly, although co-expression patterns of the genes affected by the various alternative sigma factors were still observed within the adaptive transcriptome, the clusters were less discrete which indicates that there is sigma factor connectivity under the various environmental conditions encountered.

In order to determine whether sigma factor regulon connectivity is achieved via the activity of global transcriptional regulators, we selected six of them (Anr, CbrB, FleQ, GacA, LasR and RhlR) and recorded the transcriptional profiles of the respective mutants of the Harvard Medical School PA14 transposon mutant library (*162*) (Fig. 3.16B). Remarkably, there is a clear preference of genes belonging to a specific subset of alternative sigma factor regulons within the transcription factor regulons (Fig. 3.16C). More specifically, the quorum sensing regulator LasR and the global regulator GacA show preference for the stationary phase sigma factor RpoS. Furthermore, the regulon of the flagellar biosynthesis regulator FleQ is mainly composed of target genes of the both sigma factors FliA and RpoN which were previously assigned to motility. Strikingly, target genes of the nitrogen-starvation sigma factor RpoN are over-represented in the regulon of the two-component system response regulator CbrB which is involved in the regulation of carbon and nitrogen utilization (*229*, *230*). Interestingly, AlgU-controlled genes are virtually absent in the FleQ regulon which is in line with the previous finding that AlgU represses the expression of *fleQ* (*196*).

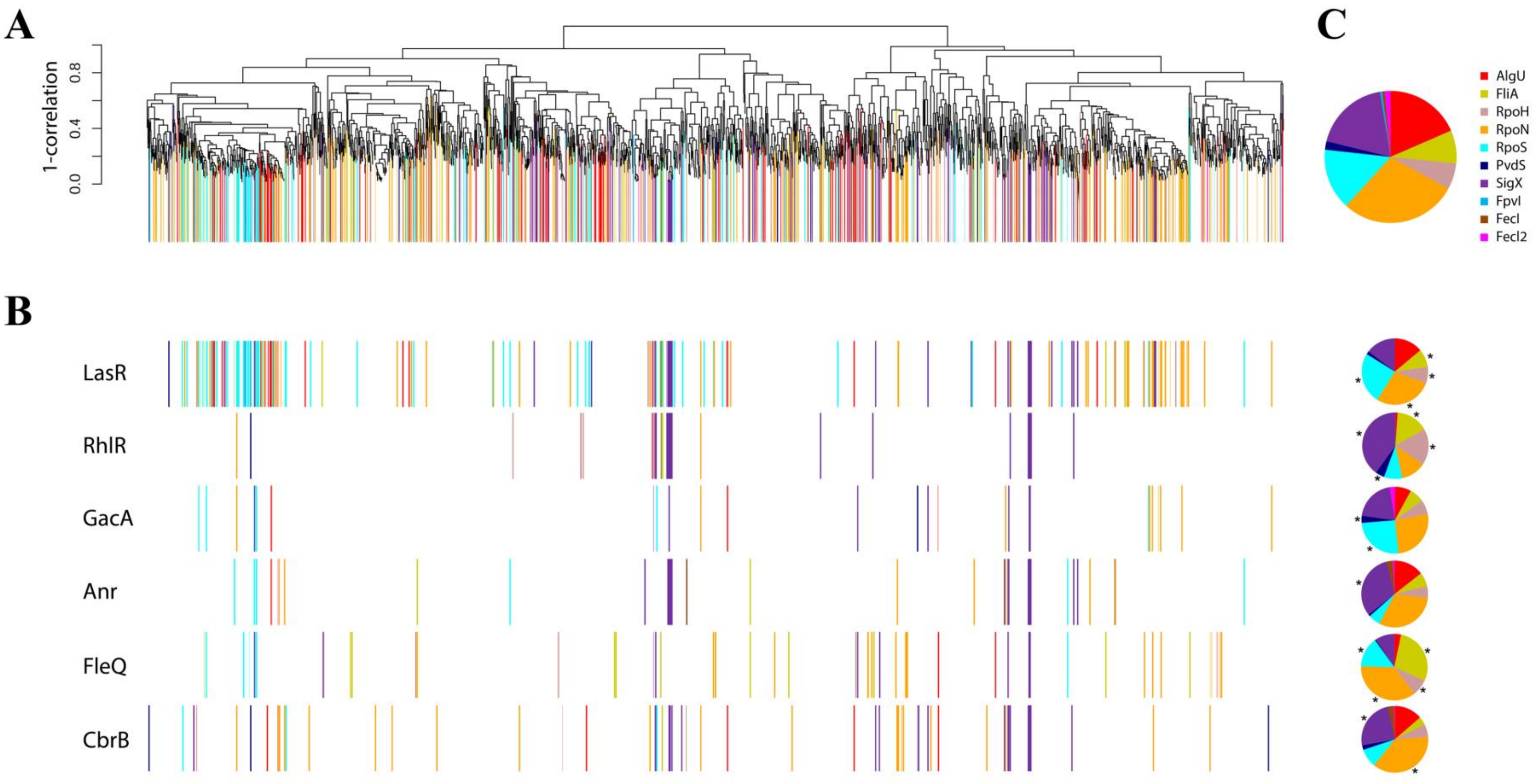



**Fig. 3.16: Active transcription factors provide connectivity among the functional modules of alternative sigma factors.**
**(A)** Hierarchical clustering tree summarizing the co-expression patterns of 3153 differentially regulated genes under 14 different environmental conditions. Genes that have been assigned to a single alternative sigma factor primary regulon (769 genes) are depicted in color. **(B)** The colored bars illustrate the position of genes that were differentially regulated by the particular transcription factor. **(C)** Distribution of genes of the primary sigma factor regulons in the adaptive transcriptome (top) and in the individual transcription factor regulons (bottom). Significant contribution of genes belonging to a distinct sigma factor regulon is marked with asterisks. Enrichment factors and P values are given in Tab. 5.7. This figure was generated and kindly provided by Denitsa Eckweiler.

## 3.6 Activity of alternative sigma factors in *P. aeruginosa*

In order to validate the results which were obtained from ChIP-seq and RNA-seq experiments as well as from sigma factor binding motif scans across all promoter regions of the PA14 genome, seven sigma factor target promoters were investigated by bioluminescence assays (Tab. 3.1). To this end, respective reporter strains were constructed (2.2.1) and analyzed under the same conditions which were selected for mRNA profiling (Tab. 5.1).

The reporter vectors harboring the target promoters of the sigma factors AlgU, FliA, RpoN, RpoS and SigX were introduced in the PA14 wild-type (test samples) and the respective PA14 sigma factor mutant strain (control samples). The promoter activity analysis revealed a significant higher signal in the reporter strains compared to the control strains with signal intensity fold changes between 3.8-fold for P*flhA* (RpoN) and 34.8-fold for P*accB* (SigX) (Fig. 3.17). The activity of the target promoters P*grpE* (RpoH) and P*pvdS* (PvdS) were assessed in comparison to the empty vector control in the PA14 wild-type. In addition, these samples were exposed to specific stimuli. The reporter strain carrying the P*grpE-luxCDABE* fusion was heat-shocked for 5 min at 42°C prior bioluminescence measurement and the reporter strain containing the P*pvdS-luxCDABE* fusion as well as the empty vector control strain were grown under iron-depletion conditions upon addition of 2,2'-Bipyridyl. In both assays, the promoter activity of the reporter test strain was significantly higher than in the corresponding control strain. In summary, the bioluminescence assays for all seven sigma factor target promoters independently verified previous results from global profiling technologies and the activity of alternative sigma factor under the selected conditions.

**Tab. 3.1: Selected sigma factor target promoters**

| Sigma factor | Target promoter | ChIP-seq | RNA-seq* | | Motif scan |
|---|---|---|---|---|---|
| | | | Sigma factor hyper-expression | Sigma factor inactivation** | |
| AlgU | P*algU* | + | ↑ | ↓ | + |
| FliA | P*fliC* | + | ↑ | ↓ | + |
| RpoN | P*flhA* | + | → | ↓/↓ | + |
| RpoS | PcheY2*** | + | → | ↓ | + |
| SigX | P*accB* | + | ↑ | →/↓ | + |
| RpoH | P*grpE* | - | ↑ | not available | + |
| PvdS | P*pvdS* | + | ↑ | ↓ | - |

* Arrows indicate the expression level of the target gene compared to the respective control (2.2.2)
** PA14 mutant strains regarding *rpoN* and *sigX* were assessed under two different conditions
*** *cheY2* equals PA14_02260

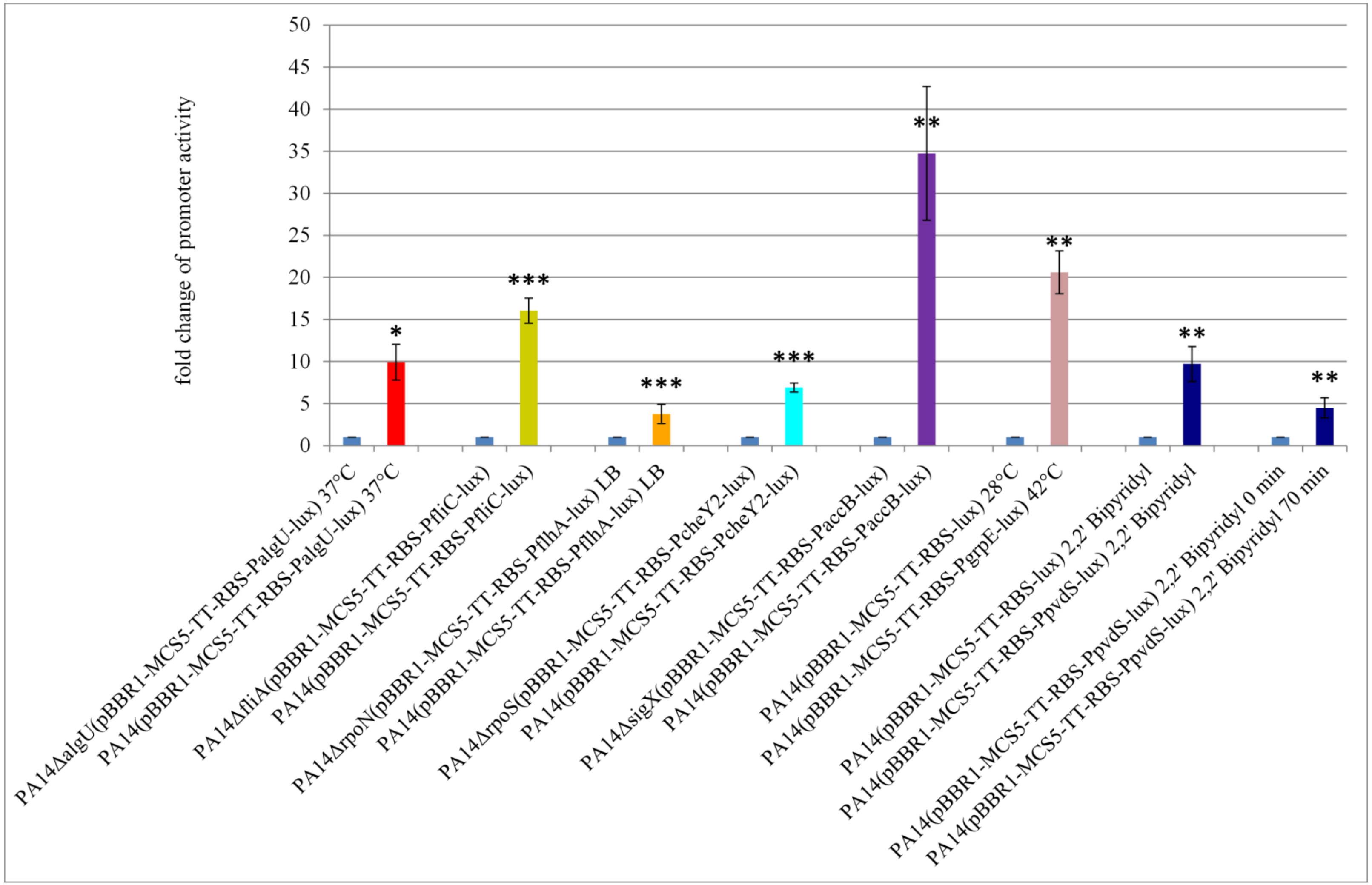



**Fig. 3.17: Activity of alternative sigma factors in *P. aeruginosa*.**
The promoter activity of reporter strains based on selected sigma factor target promoter-*luxCDABE* fusions was determined by bioluminescence assays (2.2.5). The fold change of the reporter strain to the corresponding control strain is displayed including standard deviation. P values are given in Tab. 5.8.
* P value <0.05, ** P value < 0.01 and *** P value < 0.001.

# 4 Discussion

## 4.1 Evaluation of sigma factor-associated regulatory networks in *P. aeruginosa*

Bacteria are unicellular life forms with an amazing capacity to survive under extreme conditions. In the kingdom of bacteria, *P. aeruginosa* can be distinguished by its exceptional high capability to adapt and survive in various and challenging habitats and hosts (*148*). Genome sequencing of the *P. aeruginosa* reference strain PAO1 revealed a large genome with an extraordinary complexity and strikingly high proportions of transcriptional regulators and two-component regulatory systems. These properties provide the regulatory framework for this remarkable adaptability (*16*). Among regulators, sigma factors are of exceptional importance as they confer promoter recognition specificity to the RNA polymerase (*33, 34*) and are essential for transcription initiation (*32*) which is the key step of gene regulation (*19*). Alternative sigma factors and in particular ECF sigma factors play a major role in the rapid activation of genes in response to challenging conditions and are highly abundant in *P. aeruginosa* (*29*).

The application of DNA microarrays has promoted the elucidation of bacterial regulatory networks involved in adaptation to various environmental stresses and physiological processes (*231*). Subsequently, the combination of DNA microarray and chromatin immunoprecipitation offered the opportunity to distinguish direct from indirect regulatory effects (*232-234*). With these valuable tools at hand, sigma factors gained greater attention and their impact on gene expression has been intensively studied (*148, 152-155, 235, 236*). Moreover, recent studies aimed to reveal regulatory networks in *Geobacter sulfurreducens* (*156*) and *Mycobacterium tuberculosis* (*158*) highlighting the novelty of this topic.

In this thesis, 11 sigma factor hyper-expressing and/or deletion mutant strains were constructed and mRNA profiling as well as chromatin immunoprecipitation coupled to high-throughput sequencing were performed. Growth conditions were selected which guarantee sigma factor activity and thus the elucidation of sigma factor binding sites and primary sigma factor regulons. The uncovered sigma factor-associated networks were analyzed in respect to crosstalk, functional state and the impact of transcription factors on those regulons was evaluated. The obtained results contribute to our understanding of bacterial gene regulation as well as adaptation and thus provide a reliable scaffold for the elucidation of the complete transcriptional regulatory network of *P. aeruginosa*.

### 4.1.1 Sigma factor-associated networks are functional modules

To identify the operational state of the sigma factor-associated networks, the impact of the alternative sigma factors AlgU, FliA, RpoH, RpoN, RpoS, PvdS, SigX, FpvI, FecI and FecI2 on global gene expression was uncovered by transcriptional profiling of sigma factor hyper-expressing and/or deletion mutant strains via mRNA sequencing. A subsequent hierarchical cluster analysis revealed a modular organization of the sigma factor regulons with 1504 genes (67.8%) under control of only one sigma factor, while 471 genes (21.2%) and 243 genes (11%) were co-regulated by two or more than two sigma factors, respectively. The highly modular structure of sigma factor networks is consistent with transcriptional regulatory network reconstructions in *E. coli* (*237, 238*) and *P. aeruginosa* (*239*). In addition, the particular modularity of sigma factor-associated networks has been recently demonstrated in two comprehensive studies. The first study investigated the transcriptional response of *B. subtilis* to 104 different growth conditions and revealed a high-level regulatory architecture (*157*). Most importantly, the hierarchical cluster analysis of expression data led to distinct clusters which could be grouped into regulons of various sigma factors. Strikingly, 66% of the transcriptome variance could be attributed to the variation in the activity of sigma factors which is in high accordance with the uncovered sigma factor-associated networks in this thesis. Interestingly, the two different experimental approaches, e.g. analyzing the *B. subtilis* wild-type under 104 conditions or sigma factor hyper-expression and deletion strains of *P. aeruginosa* under six selected conditions, led to a highly similar result. In the second study, the interplay between four sigma factor regulatory networks in *G. sulfurreducens* was characterized by transcriptional profiling as well as ChIP-chip and ChIP-seq approaches (*156*). The operational state analysis showed a highly modular organization of the sigma factor networks in agreement with the result of this thesis. The concept of modularity has been introduced into biology as the number of data obtained from global profiling technologies increased and a more general view on complex networks was provided. A network is referred to as modular '*if it is subdivided into relatively autonomous, internally highly connected components*' (*240*). While the insulation of these modules allows biological systems to run diverse reactions without interfering and harmful cross talk, the connectivity of modules is able to build up higher-level functions. Thus, modularity is considered to be fundamental and critical for biological organization (*240, 241*). To refine and confirm the functionality of the modules, transcriptome data was complemented by ChIP-seq experiments in this study. In combination with the transcriptional unit architecture of *P. aeruginosa,* the sigma factor binding motifs were elucidated. The uncovered motifs were in accordance with published motifs in different bacterial species underlining the high significance and quality of the experimental data. The primary sigma factor regulons were defined by candidates that were positively tested in at least two of the three approaches (RNA-seq, ChIP-seq and motif scan) and which passed rigorous statistical testing. Functional enrichment analysis revealed that the uncovered primary sigma factor regulons can be assigned to specific functions which are in line with the previously published roles of the sigma factors. As expected, the AlgU regulon comprises genes of alginate biosynthesis (*131*), FliA influences genes involved in chemotaxis and motility (*135, 136*) and PvdS directs the pyoverdine biosynthesis genes (*145*). RpoH governs genes of the heat-shock response (*107*), while RpoN controls genes of nitrogen metabolism, chemotaxis, motility and attachment (*141-143*) and RpoS regulates quorum sensing genes as well as genes involved in general adaptation processes (*144, 219*). Importantly, this integrative approach also led to the first comprehensive description of the primary SigX regulon and its role in pathogenicity which could be confirmed by accompanying phenotypic assays (*148*). Interestingly, the impact of SigX was much larger than previously anticipated in respect to the range of affected functions (qualitative) and the number of target genes (quantitative). Moreover, the primary sigmulome included 598 genes of unknown function and thus provides new information on numerous poorly characterized genes. Overall, the functional enrichment analysis across all primary sigma factor regulons covered 21 of 27 functional categories (EF>1.2) providing further evidence for the modular structure and their significance in biological systems.

In total, the sigmulome included 2553 genes (43% of the genome). Firstly, this number represents the most significant candidates which were obtained by stringent threshold settings. Secondly, the experimental design encompasses only one condition per sigma factor investigated (except RpoN and SigX) and target genes with complex gene regulation due to special environmental cues like in naturally occurring complex mixed cultures may not be activated. At third, the house-keeping sigma factor RpoD was not accessible by RNA-seq (no mutant available and *rpoD* hyper-expression did not have additional impact on global transcription) and the RpoD motif is not well-conserved which reduced the range of the sigmulome.

### 4.1.2 The cross talk among sigma factor regulons is limited and function-specific

Beyond the elucidation of functional modules, our integrative approach also offers the possibility to analyze the connectivity among the alternative sigma factor regulons. The majority of 1149 genes (61.5 % of the primary alternative sigmulome) was assigned to one distinct sigma factor regulon (no cross talk), whereas 401 genes and 317 genes were involved in direct cross talk or indirect cross talk, respectively. This finding is similar to the result based on mRNA profiling only (67.8%) and indicates a limited cross talk among sigma factor regulons with a preference to the direct cross talk.

While the indirect cross talk was preferentially assigned to central metabolic and cellular processes, the direct cross talk was mainly found to involve genes of the functional categories adaptation/protection, chaperones/heat shock proteins, chemotaxis, motility/attachment, protein secretion and secreted factors. These differences can be explained by the different complexity of the functional categories. While the regulation of central metabolic and cellular processes are relatively straight-forward and require no or moderate sigma factor cross talk, complex processes such as chemotaxis and motility/attachment constitute higher-level functions which need the direct connection of diverse functional modules (*241*). This explanation has been confirmed by transcriptional regulatory networks reconstruction studies in *E. coli* (*238*) and *P. aeruginosa* (*239*). These studies reported that development processes such as motility and biofilm formation exhibit complex topologies with long cascades, while the pathways of metabolic and signal transduction modules are commonly short. More specifically, a comprehensive analysis of the flagellar biosynthesis in *P. aeruginosa* revealed a four level hierarchy of transcriptional regulation involving RpoN and FliA as well as further transcriptional regulators (*242*).

The analysis of most frequent sigma factor combinations uncovered RpoN as the central player within the sigma factor cross talk. This key role can be attributed to numerous special features of RpoN. First, RpoN is widely distributed in the kingdom of bacteria in contrast to other alternative sigma factors (*118*). Secondly, this thesis showed that RpoN is the alternative sigma factor with the largest impact on global gene expression (680 genes) and is only outnumbered by the principal sigma factor RpoD (867 genes). At third, *rpoN* is expressed constitutively and no anti-sigma factor for RpoN has been reported. This is of particular interest since even for the house-keeping sigma factor RpoD an anti-sigma factor has been identified (*61*). Moreover, RpoN-dependent transcription is controlled by numerous co-activators allowing the modulation of RpoN activity (*119*). Finally, RpoN has been shown to be involved in numerous functions from metabolism (*141, 217*) over motility (*142*, *143*) to virulence (*243*, *244*). This universality is also reflected by the broad functional profile (Fig. 3.7). Together, these properties distinguish RpoN from other sigma factors and make it the perfect candidate to connect functional modules and thus built up higher-level functions.

### 4.1.3 Sigma factor regulons are robust and specifically interconnected by transcription factors

Robustness is key feature of biological systems and has been defined as '*the ability to maintain performance in the face of perturbations and uncertainty*' (*245*). These perturbations can be of internal (intracellular noise) and external (environmental changes) origin. Robustness shields functions and thus has been proposed to foster cellular complexity and evolvability (*246, 247*). The first evidences for robustness of sigma factor-associated networks are the modular structure, their limited cross talk as well as the limited inhibitory impact of sigma factor hyper-expression on global gene expression. One major mechanism to ensure robustness is system control by positive and negative feedback loops (*248*). While positive feedback loops amplify signals and thus increase sensitivity, negative feedback loops contribute to steady-state stability (*245*). According to the primary regulon analysis all alternative sigma factors exhibited positive auto-regulation which indicates their role in mediating signals. This feature is particular true for ECF sigma factor. Importantly, ECF sigma factor genes are the first genes in their encoding operons followed by their cognate anti-sigma factor genes. This intrinsic negative feedback loop reflects their regulatory function which has to be well-balanced. Other alternative sigma factors are mainly inactivated by the gene products of their target genes indicating delayed negative feedback loops. This observation of the combination of positive and negative feedback has been described for many biological subsystems (*249, 250*).

To investigate the robustness of sigma factor-associated networks, its functional state was analyzed by recording the transcriptional profiles of the PA14 wild-type under 14 different environmental conditions. As a result, the modular organization within the adaptive transcriptome was still visible, but less discrete indicating sigma factor connectivity under the various environmental conditions encountered (Fig. 3.16). To elucidate whether transcription factors are involved in the connectivity of sigma factor modules, the transcriptional profiles of mutant strains with inactivated transcriptional regulators (Anr, CbrB, FleQ, GacA, LasR and RhlR) were determined. The subsequent composition analysis of the transcription factor regulons revealed a clear preference of genes belonging to a specific subset of alternative sigma factor regulons.

More specifically, the enrichment of RpoS-controlled genes in the regulon of the transcription factor LasR (EF=1.63) is consistent with previous studies on the quorum sensing in *P. aeruginosa* (*105, 144, 155, 251*). These studies uncovered the contribution of RpoS, LasR-LasI and RhlR-RhlI systems to the complex architecture of the quorum sensing regulon. Likewise, the FleQ regulon shows preference for FliA (EF=3.44) and RpoN (EF=1.22) regulated genes which is in line with their known function. A comprehensive analysis of the flagellar biosynthesis in *P. aeruginosa* revealed FleQ and RpoN as class 1 genes which are on top of the regulatory cascade, while FliA was required for the expression of class 4 effector genes such as *fliC-fleL*, *cheAB-motAB-cheW, cheVR*, *flgMN* and *cheYZ* (*242*). The global response regulator GacA has been found to preferentially modulate the expression of genes which are under the guidance of RpoS (EF=1.67). This result is in according with a previous finding that GacA controls hydrogen cyanide biosynthesis via the transcriptional control of the quorum-sensing gene *rhlI* (*252*). Moreover, GacA and RpoS have been shown to be involved in biofilm formation providing a functional link of these global regulators (*253*, *254*). The composition analysis of the CbrB regulon revealed an over-representation of genes which were under control of RpoN (EF=1.27). This finding is in accordance with previous results that link the CbrA/CbrB two-component regulatory system to the regulation of the utilization of multiple carbon and nitrogen sources in *P. aeruginosa* (*229*). Further studies could show that the regulation of carbon and nitrogen utilization is co-ordinated by a network of the two-component systems CbrAB and NtrBC (*230*). Additionally, the CbrA/CbrB system is involved in metabolism, virulence and antibiotic resistance in *P. aeruginosa* (*255*) which is consistent with the numerous functions and the mode of action of RpoN (*119, 135, 141, 142, 217, 243, 244, 256*). Beyond the confirmation of published results, SigX target genes were identified to be over-represented in the regulons of the transcription factors Anr (EF=1.68), CbrB (EF=1.30) and RhlR (EF=2.12). These results underline the significance of this under-estimated and quite recently characterized sigma factor (*148, 149, 223, 257*).

In summary, the consistency of these results and published data clearly show that the composition analysis of transcription factor regulons is a valid strategy to uncover the specific interconnectivity of sigma factors and transcription factors and that these interactions provide the regulatory framework for bacterial adaptation.

## 4.2 Implications of the sigma factor-associated network organization and connectivity for bacterial adaptation

Gene regulation involves the complex interplay of promoter or *cis*-acting DNA elements and regulators termed *trans*-acting factors. Both kinds of regulatory elements exhibit a large plasticity and provide the regulatory framework for adaptation and evolution (*258*). However, the contribution of *cis*-acting elements and *trans*-acting factors to adaptation is highly different. While *cis*-acting elements can only provide static regulation, *trans*-acting factors are able to mediate dynamic regulation in the face of environmental changes (*19*). Furthermore, the genome evolution of *P. aeruginosa* is mainly determined by the highly variable accessory genome which is distributed among Pseudomonads via horizontal gene transfer (*47*). However, while the accessory genome has been shown to promote niche-specific adaptations such as in contaminated environments (*259*), persistence in various host species (*260*) and resistance to multiple classes of antibiotics (*261*), its contribution to the overall adaptability of the genus *Pseudomonas* is restricted. This property of *P. aeruginosa* has been linked to the high proportion of transcriptional regulators and two-component regulatory systems (*16*). More specifically, *P. aeruginosa* is equipped with numerous alternative sigma factors including ECF sigma factors (*29*) which have been linked to adaptation to diverse environments including bacterial virulence (*83, 109, 262*). Importantly, recent studies revealed the fundamental role of mutations in sigma factors and global transcription factors in promoting bacterial adaptation and evolution by remodeling of regulatory circuits (*263-265*). Furthermore, the dynamic and specificity of the bacterial stress response and the extreme flexibility of transcriptional regulatory networks have been elucidated (*266-268*).

Based on the results of this thesis and in line with reported research findings the following model is provided of how *P. aeruginosa* in particular and bacteria in general achieve sophisticated adaptation to complex environments (Fig. 4.1). The bacterial genome is organized in functional modules which are reflected by the alternative sigma factor regulons. These modules are robust and provide the regulatory framework for adaptation. While fundamental adaptive processes such as chemotaxis or biofilm formation based mainly on direct cross talk among sigma factors, the fine-tuned adaptation to complex environments involves transcription factors which selectively and specifically access alternative sigma factor regulons.

Future studies may uncover the sigma factor composition of further transcription factor regulons and provide deeper insight in the overall transcriptional network of *P. aeruginosa*. Finally, *in silico* simulations on the evolution of transcription factors with and without the modular genome organization provided by alternative sigma factor regulons could be an additional approach to confirm the proposed model.

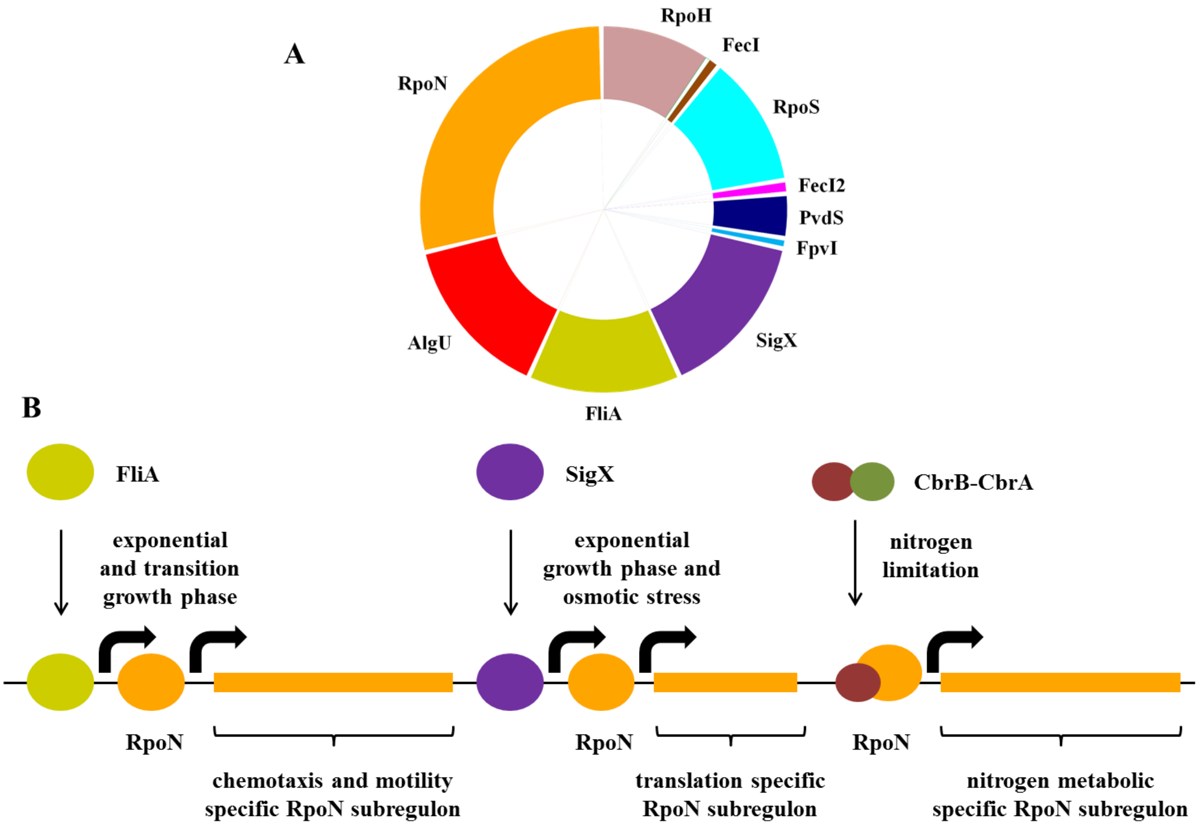



**Fig. 4.1: Simplified model of how *P. aeruginosa* uses sigma and transcription factors to adapt to different environments as exemplified by the primary RpoN regulon.**
**(A)** The genome of *P. aeruginosa* strain PA14 is divided into functional modules of primary sigma factor regulons. **(B)** Various internal and external conditions lead to specific modulation of the RpoN-dependent gene expression. RpoN can directly cross talk with the sigma factors FliA and SigX to run developmental processes like flagellum synthesis or to respond to broad stressors like osmotic pressure. Specific environmental fluctuations like nitrogen limitations are preferentially communicated by the specific and selective interaction with transcription factors.

## 4.3 Evaluation and future perspective of sigma factor-dependent promoter activity studies in *P. aeruginosa*

Bacterial luciferase reporters have become valuable tools in modern molecular biology and have been exploited to study gene expression, host-pathogen interactions and bacterial contaminations of food products (*269*). In this thesis, the sigma factor-dependent promoter activity of the target genes *algU*, *fliC*, *flhA*, *cheY2*, *accB*, *grpE* and *pvdS* was successfully determined. The obtained results verified the results from global profiling technologies and validated the selected experimental conditions as well as the sigma factor specificity of the target genes. In contrast to *in vitro* methods such as the gel shift assay or *in vitro* transcription, bioluminescence assays do not require native protein isolation. Moreover, they exhibit a high sensitivity and a broad dynamic range (*270*). However, bioluminescence assays critically rely on correct promoter selection to balance sensitivity and specificity. They must cover as much of the regulatory *cis*-acting element as necessary without including additional sequences which may give rise to background signaling. These requirements may prove difficult in highly regulated promoter regions with nested *cis*-acting elements. For these reasons, promoter regions in this study were short and excluded putative RpoD binding sites. Moreover, the results of the bioluminescence assays showed stimulus-specificity. This is consistent with previous studies that demonstrated the sodium chloride-dependent expression of *sigX* in *P. aeruginosa* (*148*) and the stochastic pulse and rate-responsiveness of the sigma factor SigB in *B. subtilis* (*266, 267*).

Future studies may combine bioluminescence assays of sigma factor target genes with phenotypic microarrays such as the BiOLOG system (*271*) to reveal unknown sigma factor-activating signals. The application of phenotypic microarrays strongly promoted the emerging field of environmental microbiology (*272*) and provided a global view of cellular phenotypes under numerous growth conditions (*271*). Global phenotypic characterization has been applied to *P. aeruginosa* to analyze the rugose small colony variant (*273*), the regulation of carbon and nitrogen utilization by CbrAB and NtrBC two-component systems (*230*) and membrane transport genes (*274*). Using the large panel of phenotypic microarrays will be a powerful and promising approach to elucidate the sigma factor-associated stimulons at the beginning of regulatory cascades in a comprehensive way.

# 5 Appendix

## 5.1 Supplementary figures

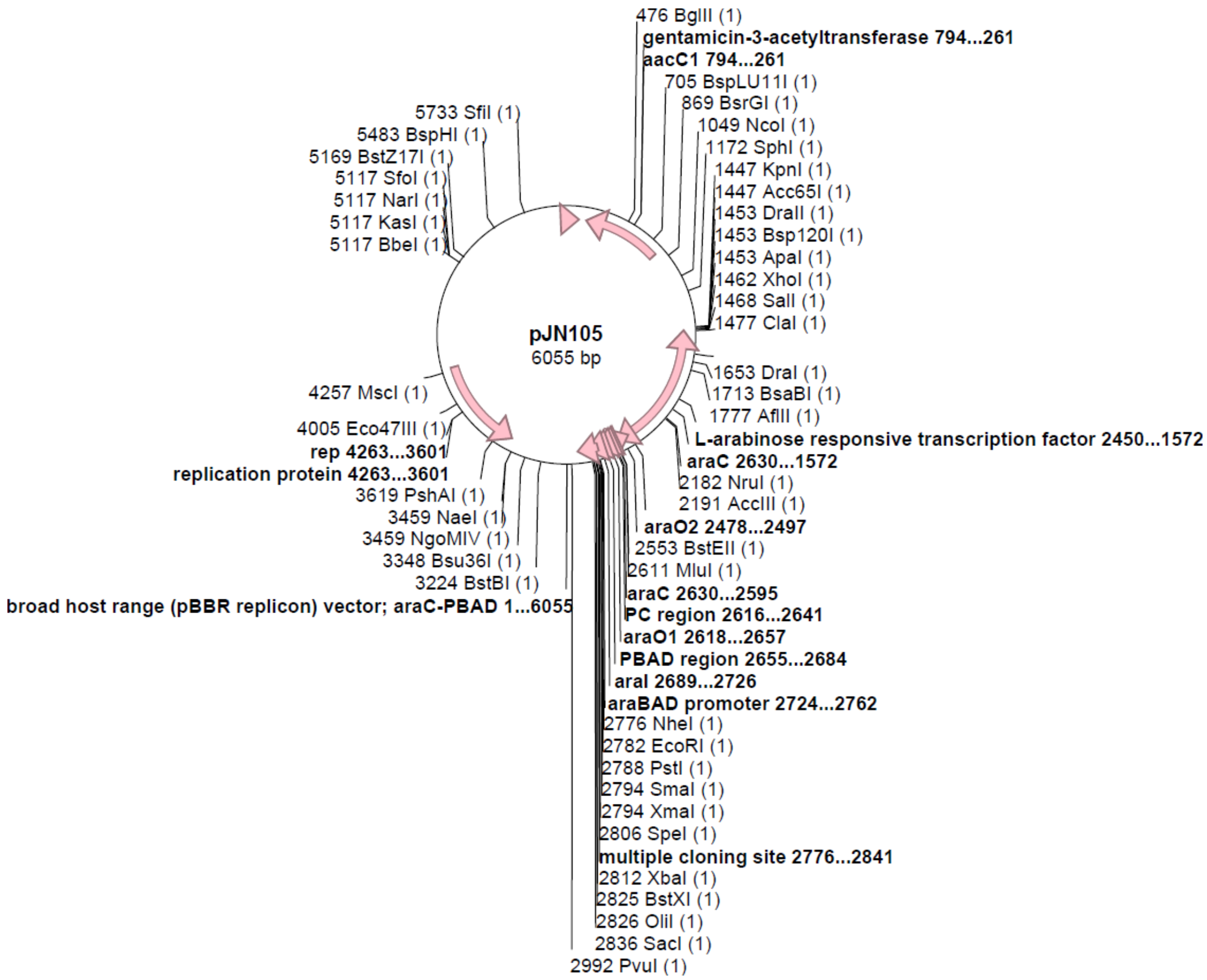



**Fig. 5.1: Vector map of pJN105.**
The plasmid editor *ApE* (*167*) was used to create the map which displays all relevant features of pJN105 (*163*) including unique restriction sites.

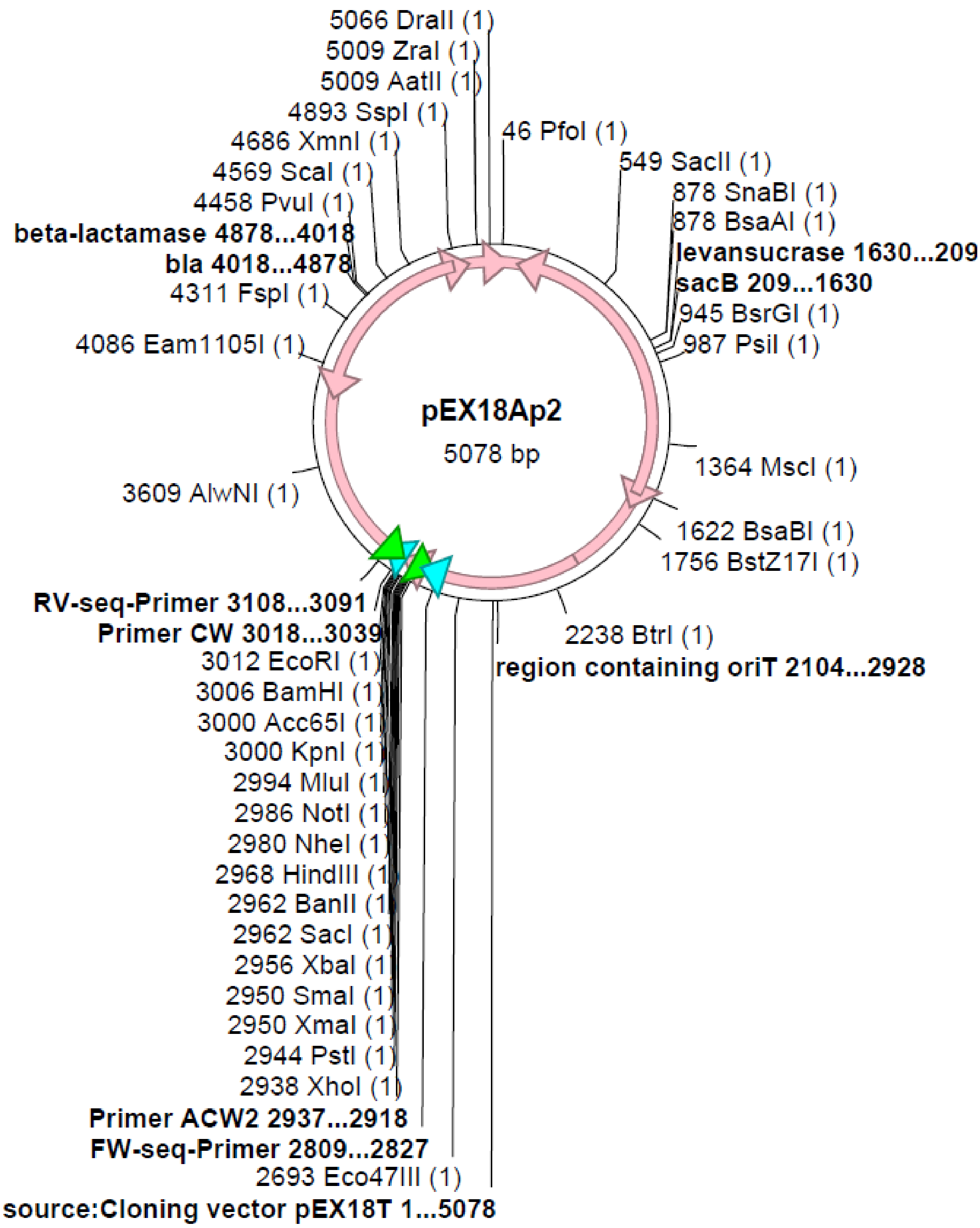



**Fig. 5.2: Vector map of the modified pEX18Ap2.**
The plasmid editor *ApE* (*167*) was used to create the map which displays all relevant features of the modified pEX18Ap (*165*) including unique restriction sites.

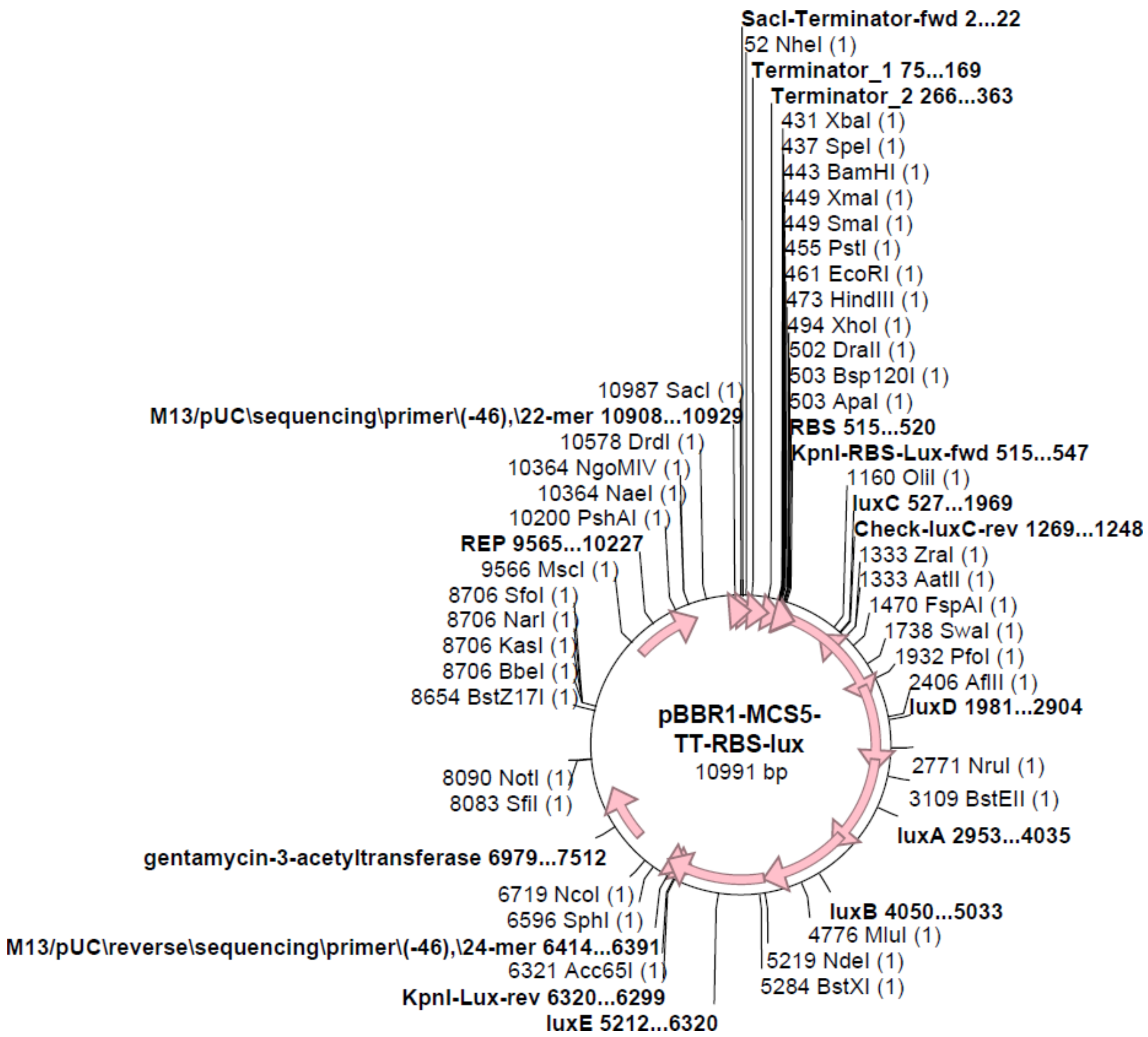



**Fig. 5.3: Vector map of pBBR1-MCS5-TT-RBS-lux.**
The plasmid editor *ApE* (*167*) was used to create the map which displays all relevant features of pBBR1-MCS5-TT-RBS-*lux* (*166*) including unique restriction sites.

## 5.2 Supplementary tables

**Tab. 5.1: Growth conditions selected in this study.**

| Strain | Growth conditions | Assay |
|---|---|---|
| PA14 | LB, 37°C, 180 rpm, OD=0.5 plus 45 min mock induction (exponential growth phase)<br>LB, 37°C, 180 rpm, OD=2.0 (transition/early stationary growth phase)<br>LB, 37°C, 180 rpm, 12 h (stationary growth phase) as previously described (*183*)<br>LB, 37°C, 24 h, humid atmosphere, microtiter plate (biofilm1) as previously described (*183*)<br>LB, 37°C, 48 h, humid atmosphere, microtiter plate (biofilm2) as previously described (*183*)<br>LB, 37°C, 180 rpm, OD=2.0 plus 75 min mock induction, 42°C heat-shock for 5 min<br>LB, 37°C, 180 rpm, OD=2.0 plus 75 min mock induction, 50°C heat-shock for 5 min<br>LB with 8 mM NaCl, 37°C, 180 rpm, OD=0.5 plus 45 min mock induction (low osmolarity) as previously described (*148*)<br>LB/$H_20$ (1:1), 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min mock induction (iron starvation)<br>DeMoss with ferric citrate, 37°C, 180 rpm, OD=2.0 (low phosphate)<br>DSMZ medium 104 with 100 mM $KNO_3$, 37°C, 16 h, anaerobic workstation (anoxic)<br>Surface-attached cells under hydrodynamic conditions (attachment and attachment control) as previously described (*275*)<br>Samples from mice with enriched bacteria in transplantable subcutaneous tumors (*ex vivo*) | RNA-seq |
| PA14Δ*algU*::$Gm^r$ | LB, 37°C, 180 rpm, OD=2.0 plus 75 min mock induction, 50°C heat-shock for 5 min | RNA-seq |
| PA14Δ*fecI*::$Gm^r$ | LB/$H_20$ (1:1), 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min mock induction | RNA-seq |
| PA14Δ*fliA*::$Gm^r$ | LB, 37°C, 180 rpm, OD=0.5 plus 45 min mock induction | RNA-seq |
| PA14Δ*fpvI*::$Gm^r$ | LB/$H_20$ (1:1), 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min mock induction | RNA-seq |
| PA14Δ*pvdS*::$Gm^r$ | LB/$H_20$ (1:1), 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min mock induction | RNA-seq |
| PA14Δ*rpoN*::$Gm^r$ | LB, 37°C, 180 rpm, OD=2.0 | RNA-seq |
| PA14Δ*rpoN* | BM2 without ammonia plus 0.1% casein amino acids, 37°C, 180 rpm, OD=1.2-1.3 | RNA-seq |
| PA14Δ*rpoS*::$Gm^r$ | LB, 37°C, 180 rpm, OD=2.0 | RNA-seq |
| PA14Δ*sigX*::$Gm^r$ | LB with 8 mM NaCl, 37°C, 180 rpm, OD=0.5 plus 45 min mock induction | RNA-seq |
| PA14Δ*sigX* | LB with 8 mM NaCl, 37°C, 180 rpm, OD=1.3-1.4 | RNA-seq |
| PA14Δ*lasR* | LB, 37°C, 180 rpm, OD=2.0 | RNA-seq |
| PA14/Tn*anr* | LB, 37°C, 180 rpm, OD=2.0 | RNA-seq |
| PA14/Tn*cbrB* | LB, 37°C, 180 rpm, OD=2.0 | RNA-seq |
| PA14/Tn*fleQ* | LB, 37°C, 180 rpm, OD=2.0 | RNA-seq |
| PA14/Tn*gacA* | LB, 37°C, 180 rpm, OD=2.0 | RNA-seq |
| PA14/Tn*rhlR* | LB, 37°C, 180 rpm, OD=2.0 | RNA-seq |
| PA14(pJN105) | All conditions which were used for its derivates plus<br>LB+Gm30, 28°C, 180 rpm, OD=1.0 plus 30 min induction without heat-shock | RNA-and ChIP-seq |
| PA14(pJN105-RBS-*algU*) | LB+Gm30, 37°C, 180 rpm, OD=2.0 plus 75 min induction, 50°C heat-shock for 5 min | RNA-seq |

| | | |
|---|---|---|
| PA14(pJN105-RBS-*algU*-his8) | LB+Gm30, 37°C, 180 rpm, OD=2.0 plus 75 min induction, 50°C heat-shock for 5 min | ChIP-seq |
| PA14(pJN105-RBS-*fliA*) | LB+Gm30, 37°C, 180 rpm, OD=0.5 plus 45 min induction | RNA-seq |
| PA14(pJN105-RBS-*fliA*-his8) | LB+Gm30, 37°C, 180 rpm, OD=0.5 plus 45 min induction | ChIP-seq |
| PA14(pJN105-RBS-*rpoH*) | LB+Gm30, 28°C, 180 rpm, OD=1.0 plus 30 min induction, 42°C heat-shock for 5 min | RNA-seq |
| PA14(pJN105-RBS-*rpoH*-his8) | LB+Gm30, 37°C, 180 rpm, OD=2.0 plus 75 min induction, 42°C heat-shock for 5 min | ChIP-seq |
| PA14(pJN105-RBS-*rpoN*) | LB+Gm30, 37°C, 180 rpm, OD=1.0 and induction until OD=2.0 | RNA-seq |
| PA14(pJN105-RBS-*rpoN*-his8) | LB+Gm30, 37°C, 180 rpm, OD=1.0 and induction until OD=2.0 | ChIP-seq |
| PA14(pJN105-RBS-*rpoS*) | LB+Gm30, 37°C, 180 rpm, OD=1.0 and induction until OD=2.0 | RNA-seq |
| PA14(pJN105-RBS-*rpoS*-his8) | LB+Gm30, 37°C, 180 rpm, OD=1.0 and induction until OD=2.0 | ChIP-seq |
| PA14(pJN105-RBS-*sigX*) | LB+Gm30 with 8 mM NaCl, 37°C, 180 rpm, OD=0.5 plus 45 min induction | RNA-seq |
| PA14(pJN105-RBS-*sigX*-his8) | LB+Gm30 with 8 mM NaCl, 37°C, 180 rpm, OD=0.5 plus 45 min induction | ChIP-seq |
| PA14(pJN105-RBS-*pvdS*) | LB/$H_2$0 (1:1)+Gm30, 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min induction | RNA-seq |
| PA14(pJN105-RBS-*pvdS*-his8) | LB/$H_2$0 (1:1)+Gm30, 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min induction | ChIP-seq |
| PA14(pJN105-RBS-*fpvI*) | LB/$H_2$0 (1:1)+Gm30, 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min induction | RNA-seq |
| PA14(pJN105-RBS-*fpvI*-his8) | LB/$H_2$0 (1:1)+Gm30, 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min induction | ChIP-seq |
| PA14(pJN105-RBS-*fecI*) | LB/$H_2$0 (1:1)+Gm30, 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min induction | RNA-seq |
| PA14(pJN105-RBS-*fecI*-his8) | LB/$H_2$0 (1:1)+Gm30, 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min induction | ChIP-seq |
| PA14(pJN105-RBS-*fecI2*) | LB/$H_2$0 (1:1)+Gm30, 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min induction | RNA-seq |
| PA14(pJN105-RBS-*fecI2*-his8) | LB/$H_2$0 (1:1)+Gm30, 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min induction | ChIP-seq |
| PA14(pJN105-RBS-*rpoD*-his8) | LB+Gm30, 37°C, 180 rpm, OD=0.5 plus 45 min induction | ChIP-seq |
| PA14(pBBR1-MCS5-TT-RBS-*lux*) | All conditions which were used for its derivates plus<br>LB+Gm30, 28°C, 180 rpm, OD=1.0 plus 30 min induction without heat-shock and<br>LB/$H_2$0 (1:1) +Gm30, 37°C, 180 rpm, OD=1.5 plus 70 min mock induction without 2,2'-Bipyridyl | bioluminescence |
| PA14(pBBR1-MCS5-TT-RBS-P*accB-lux*) | LB+Gm30 with 8 mM NaCl, 37°C, 180 rpm, OD=1.3-1.4 | bioluminescence |
| PA14Δ*sigX*(pBBR1-MCS5-TT-RBS-*PaccB-lux)* | LB+Gm30 with 8 mM NaCl, 37°C, 180 rpm, OD=1.3-1.4 | bioluminescence |
| PA14(pBBR1-MCS5-TT-RBS-P*algU-lux*) | LB+Gm30, 37°C, 180 rpm, OD=2.0 plus 75 min mock induction, 50°C heat-shock for 5 min | bioluminescence |
| PA14Δ*algU*(pBBR1-MCS5-TT-RBS-P*algU-lux*) | LB+Gm30, 37°C, 180 rpm, OD=2.0 plus 75 min mock induction, 50°C heat-shock for 5 min | bioluminescence |
| PA14(pBBR1-MCS5-TT-RBS-P*cheY2-lux*) | LB+Gm30, 37°C, 180 rpm, OD=2.0 | bioluminescence |
| PA14Δ*rpoS*(pBBR1-MCS5-TT-RBS-P*cheY2-lux*) | LB+Gm30, 37°C, 180 rpm, OD=2.0 | bioluminescence |
| PA14(pBBR1-MCS5-TT-RBS-P*flhA-lux*) | LB+Gm30, 37°C, 180 rpm, OD=2.0 | bioluminescence |
| PA14Δ*rpoN*(pBBR1-MCS5-TT-RBS-P*flhA-lux*) | LB+Gm30, 37°C, 180 rpm, OD=2.0 | bioluminescence |
| PA14(pBBR1-MCS5-TT-RBS-P*fliC-lux*) | LB+Gm30, 37°C, 180 rpm, OD=0.5 plus 45 min mock induction | bioluminescence |
| PA14Δ*fliA*(pBBR1-MCS5-TT-RBS-P*fliC-lux*) | LB+Gm30, 37°C, 180 rpm, OD=0.5 plus 45 min mock induction | bioluminescence |
| PA14(pBBR1-MCS5-TT-RBS-P*grpE-lux*) | LB+Gm30, 28°C, 180 rpm, OD=1.0 plus 30 min induction, 42°C heat-shock for 5 min | bioluminescence |
| PA14(pBBR1-MCS5-TT-RBS-P*pvdS-lux*) | LB/$H_2$0 (1:1)+Gm30, 37°C, 180 rpm, OD=1.5 plus 200 µM 2,2'-Bipyridyl and 70 min mock induction | bioluminescence |

**Tab. 5.2: Abstract of sigma factor-dependent gene expression according to mRNA profiling.**

| **Sigma factor** | **Impact on global gene expression** | | | | | |
|---|---|---|---|---|---|---|
| | **Number of activated genes** | | | **Number of inhibited genes** | | |
| | complete | cross talk | no cross talk | complete | cross talk | no cross talk |
| AlgU | 372 | 178 | 194 | 225 | 69 | 156 |
| FliA | 440 | 262 | 178 | 44 | 26 | 18 |
| RpoH | 520 | 252 | 268 | 327 | 113 | 214 |
| RpoN * | 600 | 344 | 256 | 228 | 121 | 107 |
| RpoS | 219 | 77 | 142 | 22 | 13 | 9 |
| PvdS | 159 | 105 | 54 | 40 | 28 | 12 |
| SigX * | 610 | 299 | 311 | 74 | 48 | 26 |
| FpvI | 184 | 138 | 46 | 111 | 76 | 35 |
| FecI | 57 | 45 | 12 | 4 | 4 | 0 |
| FecI2 | 129 | 86 | 43 | 201 | 134 | 67 |
| **Sum** | **3290** | **1786** | **1504** | **1276** | **632** | **644** |

* PA14 mutant strains regarding *rpoN* and *sigX* were assessed under two different conditions

**Tab. 5.3: The 20 most frequent sigma factor cross talks according to mRNA profiling.**

| **Sigma factor combinations*** | **Number of affected genes** | **Rank** |
|---|---|---|
| RpoN SigX | 76 | 1 |
| AlgU RpoN | 49 | 2 |
| FliA RpoN | 45 | 3 |
| FliA RpoH | 42 | 4 |
| RpoH RpoN | 24 | 5 |
| AlgU RpoH RpoN | 23 | 6 |
| FliA SigX | 23 | 6 |
| AlgU RpoH | 21 | 8 |
| RpoS SigX | 18 | 9 |
| RpoH SigX | 16 | 10 |
| AlgU SigX | 15 | 11 |
| FliA RpoS | 14 | 12 |
| RpoH RpoN FpvI FecI2 | 13 | 13 |
| SigX FpvI | 13 | 13 |
| RpoN RpoS | 12 | 15 |
| FliA RpoN SigX | 11 | 16 |
| PvdS SigX | 11 | 16 |
| AlgU FliA | 10 | 18 |
| AlgU FliA RpoH | 10 | 18 |
| RpoH FpvI | 10 | 18 |
| **Sum** | **456** | **1-20** |
| Other combinations | 258 | >20 |

* 125 sigma factor combinations were identified in total.

**Tab. 5.4: Results of global profiling technologies.**

| PA14 ID | Primary sigma factor regulon | | | | | | | | | | | mRNA profiling | | | | | | | | | | cross talk | mRNA profiling | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RpoD | AlgU | FliA | RpoH | RpoN | RpoS | PvdS | SigX | FpvI | FecI | FecI2 | AlgU | FliA | RpoH | RpoN | RpoS | PvdS | SigX | FpvI | FecI | FecI2 | | Anr | CbrB | FleQ | GacA | LasR | RhlR |
| PA0296-PA0297 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA0887.1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA1030.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA1052-PA1053 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00010 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00020 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00030 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00050 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_00090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00170 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00200 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_00290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_00300 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_00310 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_00320 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_00470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_00480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00560 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_00570 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00580 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_00630 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_00640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_00650 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_00680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00710 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_00720 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00730 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00740 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PA14_00790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00800 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_00820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 1 | 0 | 0 |
| PA14_00830 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 1 | 1 | 0 | 0 |
| PA14_00850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_00860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_00875 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_00910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 1 | 0 | 0 |
| PA14_00925 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_00940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_01010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 1 | 0 | 0 |
| PA14_01020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 1 | 0 | 0 |
| PA14_01030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_01040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_01070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_01080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 1 | 0 | 0 |
| PA14_01100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_01110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_01140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_01160 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01170 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01180 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_01190 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01200 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 0 | 0 |
| PA14_01220 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01230 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_01240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_01290 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_01300 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_01310 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01320 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_01330 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01360 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01380 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01390 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01400 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01410 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 1 |
| PA14_01500 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_01560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_01600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_01610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_01620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 0 | 1 | 0 |
| PA14_01660 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01670 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01680 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01690 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01710 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_01760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01770 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01780 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01800 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01810 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01900 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01910 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_01940 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01960 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01970 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_01980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_02020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02060 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_02070 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02090 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02100 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02180 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_02190 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_02200 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_02220 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_02230 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_02250 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_02260 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_02270 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_02300 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02360 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02390 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02410 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_02435 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_02460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_02490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02520 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 1 | 0 | 0 | 0 |
| PA14_02530 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_02650 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02660 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02680 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02690 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02700 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02720 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02750 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_02850 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03090 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03120 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03130 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_03166 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_03170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03190 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_03210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03240 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03265 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03285 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03320 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03330 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_03340 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |

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| PA14_03350 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03370 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_03390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03430 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_03480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03490 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_03510 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_03520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_03580 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_03610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_03680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03700 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03720 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03730 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03800 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03860 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03870 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_03880 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_03900 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_03920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03930 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03940 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_03950 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_03960 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_03980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_04030 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04040 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04060 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04070 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04100 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_04180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04190 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_04210 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04230 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04290 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04300 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_04330 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04340 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04350 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04380 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04390 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04410 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_04510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_04530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04640 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04650 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_04660 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04670 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04700 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_04780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_04790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_04810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_04860 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04870 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04890 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04900 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04910 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04920 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04930 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04940 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_04980 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05000 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05070 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05080 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |

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| PA14_05110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_05120 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05200 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_05440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05500 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05510 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_05600 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 1 | 1 | 1 |
| PA14_05620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_05640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05690 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05700 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05740 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05750 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05770 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05775 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05790 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05810 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_05840 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05880 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_05890 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05950 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05960 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_05970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06000 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_06010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |

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| PA14_06040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06120 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06130 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06230 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_06300 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_06310 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_06320 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_06400 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06430 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_06570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06580 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06600 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06640 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_06660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_06670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_06680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_06690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_06700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_06710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_06720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_06730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 1 | 0 | 0 |
| PA14_06740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 1 | 0 | 0 |
| PA14_06750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 1 | 1 | 0 | 0 |
| PA14_06770 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_06790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_06800 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 1 | 0 | 1 | 0 |
| PA14_06830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 1 | 1 | 0 | 0 |
| PA14_06840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_06860 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |

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| PA14_06870 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06875 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_06880 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_06930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06960 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06980 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_06990 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07000 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07010 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07020 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07060 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_07090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 1 | 1 | 1 |
| PA14_07110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 1 | 1 | 1 |
| PA14_07170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07190 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07330 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07370 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07430 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07450 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07480 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_07500 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07550 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07570 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07600 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07650 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07660 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07680 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07740 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07760 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07770 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07780 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07790 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_07800 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07850 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_07890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_07950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_07980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_08000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_08150 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08160 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08190 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08200 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08210 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08220 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08340 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08350 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08360 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08370 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08430 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08440 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08460 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08470 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08480 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08490 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08500 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08510 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08695 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08710 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08730 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_08740 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08750 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08780 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_08790 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_08830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08840 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08850 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_08860 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_08870 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_08880 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08890 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08900 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08910 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08920 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_08930 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08940 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08950 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08960 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08970 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_08980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_08990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_09000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_09010 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_09020 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_09030 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09040 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_09050 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09100 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09130 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_09160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 1 | 0 | 0 |
| PA14_09210 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_09220 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_09230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_09240 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_09260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_09280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_09300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_09400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 1 |
| PA14_09410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 1 | 1 |
| PA14_09420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_09440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_09450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_09460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 0 | 1 | 1 | 1 |
| PA14_09470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 1 | 1 |
| PA14_09480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 1 | 1 | 1 |

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| PA14_09490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 1 |
| PA14_09500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_09520 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_09530 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_09540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 1 | 1 | 1 |
| PA14_09550 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09570 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09580 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09600 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | no | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_09630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_09660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_09680 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_09690 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_09700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_09710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09730 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09760 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09790 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09880 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09900 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | indirect | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_09920 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09930 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_09940 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_09950 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_09980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10160 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10170 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10300 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10330 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_10340 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 1 |

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| PA14_10350 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_10360 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_10370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 0 | 0 | 0 |
| PA14_10380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 0 | 1 | 0 |
| PA14_10440 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10480 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_10500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_10530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_10540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_10550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_10560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_10630 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10650 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_10710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_10730 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_10740 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
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| PA14_10800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11020 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11030 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11050 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11080 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11090 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11100 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_11130 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_11140 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_11150 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11160 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11240 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11250 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11260 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | direct | 1 | 0 | 0 | 0 | 1 | 0 |

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| PA14_11340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11520 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11530 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_11590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11600 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11610 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11620 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11670 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_11700 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11730 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11760 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11770 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_11790 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_11810 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_11830 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11890 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_11910 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_11920 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11930 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11940 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11960 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_11980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12080 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12160 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_12300 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12440 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12450 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12470 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12490 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12570 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12620 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12680 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_12690 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12710 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12740 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_12750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12820 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12840 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_12900 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12910 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12960 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_12990 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_13000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13010 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_13040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_13050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_13090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_13140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_13150 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13170 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13190 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13200 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_13260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_13280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_13290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 1 | 0 | 0 |
| PA14_13300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 1 | 1 | 0 | 1 | 0 | 0 |
| PA14_13320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_13340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13420 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13430 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13580 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |

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| PA14_13590 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13600 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13610 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13620 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13630 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13720 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_13730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_13740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 1 | 0 | 1 | 0 |
| PA14_13770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 1 | 1 | 0 | 0 | 0 |
| PA14_13780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13860 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13870 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13880 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13890 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13940 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_13950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_14060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14100 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_14110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14130 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14330 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_14380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_14390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_14430 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14450 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14500 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14510 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14540 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_14550 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_14560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14600 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_14610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_14630 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_14650 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_14660 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_14710 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14730 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14740 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14770 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14780 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_14930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14940 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_14990 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_15000 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15020 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_15090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_15110 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_15120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_15140 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15150 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_15290 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15310 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_15340 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_15350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_15360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15430 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15435 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15445 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15450 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15460 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15475 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15480 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15490 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |

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| PA14_15510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 1 |
| PA14_15560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 1 |
| PA14_15650 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15660 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15770 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_15790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_15820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_15930 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15940 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15960 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15970 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_15980 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_15990 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16000 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_16010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16020 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16100 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_16110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_16130 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16150 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16160 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_16180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 1 | 0 | 0 |
| PA14_16190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_16250 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_16260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16280 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16300 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_16310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 1 |
| PA14_16320 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_16370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16380 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_16390 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_16440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16510 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16630 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16640 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16680 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16690 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16800 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_16820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_16860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16870 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_16990 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_17070 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_17080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_17100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17120 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17140 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17250 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_17270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17350 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17480 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_17490 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 1 | 1 | 1 | 0 |
| PA14_17590 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17600 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17610 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_17620 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17630 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17660 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17690 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17720 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17740 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17760 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17790 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17810 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17820 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17850 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17860 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17880 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17890 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17930 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17960 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_17980 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_17990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18080 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18090 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18100 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_18120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_18140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 1 | 0 | 0 | 0 |
| PA14_18150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_18160 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_18260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_18275 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_18300 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18310 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18320 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18330 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18340 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18350 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_18360 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18380 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18410 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_18430 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18470 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18480 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18500 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18510 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18520 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18550 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18565 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_18630 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_18670 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18680 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18690 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18720 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_18740 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_18750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_18780 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_18810 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18830 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18850 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18860 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18870 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18960 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_18970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_18985 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_19020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_19065 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19100 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_19110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_19120 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_19130 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_19140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19310 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_19350 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_19360 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_19370 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_19380 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 1 | 0 |

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| PA14_19400 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19410 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19470 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19480 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_19490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19530 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19540 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19560 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19570 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19580 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19590 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19600 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19610 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19650 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19680 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19690 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19710 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19720 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_19810 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_19870 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_19900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_19910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_19920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_19990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20040 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20060 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20070 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20080 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20100 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20140 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_20150 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_20170 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20180 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_20190 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 0 | 1 | 0 | 0 |
| PA14_20200 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 1 | 1 | 0 | 1 | 0 | 0 |

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| PA14_20230 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 1 | 1 | 0 | 0 |
| PA14_20250 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20280 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20290 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_20300 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20320 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20330 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20350 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20360 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20370 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20380 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20390 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20400 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20420 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20430 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20440 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20450 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20460 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_20470 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_20480 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_20560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_20570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_20580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_20590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_20610 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 1 | 1 | 1 |
| PA14_20620 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20630 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20650 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20670 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_20680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20700 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_20720 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20730 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20740 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20750 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_20770 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_20780 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_20850 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20860 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_20870 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_20890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_20900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 1 |

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| PA14_20920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 1 | 1 | 1 |
| PA14_20940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 1 | 1 |
| PA14_20950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 0 | 1 | 1 | 1 |
| PA14_20960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 1 | 1 | 0 | 0 | 1 | 1 |
| PA14_20970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 1 | 1 | 1 | 1 |
| PA14_20980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 1 | 1 |
| PA14_21000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 1 | 0 | 1 | 1 |
| PA14_21010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_21020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 1 | 0 | 1 | 1 | 1 |
| PA14_21030 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_21080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21110 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21120 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21160 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21190 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_21220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_21230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21240 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21250 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21260 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_21280 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21310 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21320 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21340 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_21460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_21470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_21510 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21540 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21550 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21560 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21620 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21650 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21660 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_21670 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21680 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_21690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_21710 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_21750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21760 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21820 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21830 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21840 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21890 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21900 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21910 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21920 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21930 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_21940 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21960 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_21970 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22075 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22100 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22210 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_22230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22250 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_22400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_22410 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22460 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22470 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_22500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22520 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22530 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22540 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22550 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_22590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22690 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22760 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22770 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22880 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_22890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_22910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_22930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_22940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_22960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_22980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_22990 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_23000 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_23010 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_23030 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_23060 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_23080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_23090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_23110 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23130 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23260 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23290 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23330 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_23370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_23380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_23400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_23420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23430 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23510 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23590 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23610 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_23680 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_23700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23760 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_23860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23920 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23930 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23950 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_23970 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_23980 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_23990 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24010 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24020 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24040 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24050 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24060 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24070 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24080 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24100 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24140 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24150 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24290 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_24300 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_24310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_24330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_24360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24370 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24440 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24480 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_24490 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_24500 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_24510 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_24530 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_24550 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_24560 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |

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| PA14_24570 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24620 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24650 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_24665 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24740 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24760 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24770 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24780 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_24810 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24830 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24860 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 1 |
| PA14_24880 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24940 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24950 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24960 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_24970 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_24980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_25020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_25030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_25040 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25060 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25080 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25090 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25100 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_25180 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25195 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25210 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25220 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25250 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_25280 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25305 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25320 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25330 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25340 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25350 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_25360 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25370 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25430 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25440 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25450 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25580 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25600 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25610 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25620 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_25630 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25640 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25650 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25660 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25670 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_25730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25770 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25810 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25820 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25830 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25840 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25860 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25880 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_25900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_25970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26010 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26020 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_26060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_26070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26080 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26110 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26160 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26165 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_26270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_26330 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26340 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_26350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_26360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26400 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26460 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26470 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26480 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26600 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26610 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26620 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26720 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26770 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26780 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_26810 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26830 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26850 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26880 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26890 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26960 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26970 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26980 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_26990 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27000 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 1 | 0 | 1 | 0 | 0 | 0 |
| PA14_27070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27100 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27120 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27160 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27170 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27210 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_27220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27230 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_27350 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27360 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_27460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_27480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27490 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27500 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27675 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27730 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_27770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27910 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27930 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27940 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27950 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_27990 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28000 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28030 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28050 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_28060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28140 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_28200 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28210 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28250 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_28260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28280 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28290 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28340 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28350 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_28360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_28410 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28490 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_28520 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28530 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28540 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28580 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28600 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28610 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28620 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_28630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_28660 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28670 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28680 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28690 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28710 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28720 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28730 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28780 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_28810 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28850 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28870 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_28895 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_28940 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_28980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_29070 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_29120 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |

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| PA14_29150 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29160 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29180 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29210 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_29220 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_29230 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_29240 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_29250 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29330 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_29360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_29470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_29480 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29490 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29500 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29510 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29520 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29530 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29540 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29550 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29560 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29570 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_29620 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29640 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_29650 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_29660 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_29710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29760 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_29770 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_29800 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_29820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29850 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29860 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29880 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29890 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29900 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29920 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29930 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29940 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_29970 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29980 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_29990 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30010 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30020 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30190 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30200 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30210 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30240 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30410 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30430 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30440 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30450 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30460 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30470 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30490 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30500 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30550 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30600 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_30630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_30660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_30690 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30700 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30730 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30800 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30820 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30830 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |

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| PA14_30840 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_30850 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30860 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30870 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30880 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30890 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30900 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30910 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_30990 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31050 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31060 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31070 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31080 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31090 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31100 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31130 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_31160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_31170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_31180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31220 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31230 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31250 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31290 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_31300 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31330 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31340 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 1 | 1 | 0 | 1 | 1 |
| PA14_31360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_31370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_31380 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_31400 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31420 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31430 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31440 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_31470 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_31480 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_31510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_31530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_31540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_31560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_31610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31640 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_31700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_31730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_31740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_31760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31770 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31780 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_31820 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31870 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31890 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31900 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31920 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31930 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31970 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_31990 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_32150 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_32160 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_32190 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_32220 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32230 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32240 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_32310 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32360 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32380 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_32390 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32400 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32410 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32480 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_32490 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32500 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32600 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32610 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_32630 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_32740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32780 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_32850 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32860 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32880 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32890 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32905 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_32970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_32985 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33000 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33010 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33030 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33040 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 0 | 0 | 0 |
| PA14_33060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_33150 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33160 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 1 | 0 | 0 | 1 | 1 | 0 |
| PA14_33190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_33230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33250 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33260 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33270 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33280 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_33290 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_33320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_33360 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33430 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33440 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33450 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_33460 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_33480 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_33500 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_33510 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33520 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33530 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33540 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33550 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33560 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33570 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33580 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33590 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33600 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33610 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33630 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33650 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33690 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33700 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33710 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33720 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33730 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_33740 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33750 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33760 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33770 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33810 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33870 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_33960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_33970 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |

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| PA14_33980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_33990 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_34000 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34010 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_34020 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34030 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_34050 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_34070 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_34080 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34100 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34110 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34130 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_34140 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_34150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34180 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34190 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34200 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34210 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34260 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34270 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34280 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34290 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34300 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34320 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34330 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_34490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 1 |
| PA14_34500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_34510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34520 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34540 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_34630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_34640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_34660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_34670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34700 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34710 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34750 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34770 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34780 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_34790 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_34810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34870 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_34880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_34900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_34970 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_34990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35070 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_35210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35270 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35290 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35300 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35320 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35340 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_35370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35380 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35390 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35400 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35430 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_35500 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
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| PA14_35630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_35640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_35700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_35720 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_35730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35740 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_35750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_35760 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_35770 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_35780 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_35790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_35800 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35810 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35820 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35840 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_35850 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35940 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35950 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35970 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35980 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_35990 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36000 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36050 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36060 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36070 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36130 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36150 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36170 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36200 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36260 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36270 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36280 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36290 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_36310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_36320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_36330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_36345 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_36350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36360 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_36370 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36375 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_36400 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_36410 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_36420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36450 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36460 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_36480 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_36490 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_36500 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_36520 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36530 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_36540 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_36550 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36560 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36570 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_36580 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_36590 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_36605 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36620 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36630 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36650 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36660 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36670 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36680 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36690 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36700 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36710 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36730 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_36740 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_36760 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_36770 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36780 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36790 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36810 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_36820 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_36830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_36840 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_36850 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36860 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36870 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_36880 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_36890 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36900 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_36910 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 1 | 0 | 1 | 0 | 0 | 0 |
| PA14_36920 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36930 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_36940 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_36960 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_36980 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_37010 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37070 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 1 | 0 | 1 | 0 |
| PA14_37080 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_37190 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_37220 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_37260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_37270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_37290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_37310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_37320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_37340 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_37350 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37530 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_37610 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_37630 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_37650 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37660 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_37670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_37680 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37690 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_37710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_37730 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37745 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_37760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_37770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_37780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_37830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_37850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37940 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_37990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38000 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38020 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38040 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38050 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38060 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_38140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38180 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38190 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38210 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38220 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_38270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_38290 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38300 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38310 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38340 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_38350 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_38370 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38380 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38395 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38430 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38440 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38460 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38470 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38480 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38490 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_38530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_38550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_38570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_38580 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 1 | 0 | 0 | 0 |
| PA14_38590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |

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| PA14_38630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38660 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38680 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38690 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38700 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38710 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38720 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38770 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38825 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38840 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_38860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_38990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39050 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39080 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39090 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_39130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39190 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39200 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39210 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39220 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39230 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39240 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39250 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39260 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39270 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_39280 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_39300 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_39320 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_39330 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_39350 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_39390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_39410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_39420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_39460 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_39470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_39480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_39500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_39530 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_39540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39560 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_39610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_39620 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39630 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39650 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39660 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_39710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_39780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_39790 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_39880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_39890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_39910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_39925 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_39945 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 1 |
| PA14_39960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_39970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 1 |
| PA14_39980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40100 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_40110 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_40180 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_40200 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_40230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 1 | 1 | 1 | 0 |
| PA14_40240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 1 | 1 | 1 | 0 |
| PA14_40250 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 1 | 1 | 1 | 0 |
| PA14_40260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_40270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_40300 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_40310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_40380 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40430 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_40490 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40510 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_40550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_40560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_40620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40630 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_40710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_40770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40800 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40820 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40830 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40840 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_40880 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40890 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_40980 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41000 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41190 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41210 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41220 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41230 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_41300 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41350 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41440 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_41470 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_41480 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41490 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41500 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_41510 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41520 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41530 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41540 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41560 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41563 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41570 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41575 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41650 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |

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| PA14_41670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41800 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41810 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41870 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41920 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_41960 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_41970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_41980 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_41990 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42000 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42010 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42030 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42050 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42060 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42080 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42090 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42130 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_42140 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_42150 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_42160 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_42180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42200 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_42220 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_42250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42260 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42280 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 0 | 0 |
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| PA14_42300 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42310 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_42320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_42340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42350 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_42390 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_42400 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_42410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42430 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |

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| PA14_42440 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_42450 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42460 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42470 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_42480 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_42490 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42500 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_42510 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42520 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42530 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42540 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42550 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_42580 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_42620 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42660 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_42670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42780 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_42820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42830 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42840 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_42860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 1 | 0 | 1 | 0 |
| PA14_42880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_42890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_42900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 1 | 1 |
| PA14_42910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_42920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_42940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_42950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_42960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_42970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_42980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_42990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_43000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_43020 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_43030 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_43040 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_43050 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_43070 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43100 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_43160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43220 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43270 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43280 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43420 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43430 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43480 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43490 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43620 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43630 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43640 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43680 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43690 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43710 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_43720 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43740 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_43770 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43780 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43790 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43810 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43840 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_43850 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_43880 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43890 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43900 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43910 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_43920 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44020 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44030 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44050 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44060 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44070 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44080 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_44100 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_44150 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44160 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44170 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44190 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44200 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44210 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44240 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_44260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_44280 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44290 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_44300 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44311 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_44320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44340 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_44350 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | indirect | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_44360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | indirect | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_44390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_44470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_44480 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 1 | 0 | 1 | 0 | 0 | 0 |
| PA14_44490 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_44500 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_44510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44560 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44570 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
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| PA14_44660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44800 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44830 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44840 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44850 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44860 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44880 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44890 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_44910 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_44920 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_44950 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_44990 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45050 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45150 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45170 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45180 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45190 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45260 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45280 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45290 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45300 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45310 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45330 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45340 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45350 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45400 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_45410 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45460 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45480 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45520 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45540 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45560 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45580 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45590 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_45610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45620 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45630 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45660 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_45680 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_45740 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45760 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_45770 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45780 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45790 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45800 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45810 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45830 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_45840 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45850 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_45910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_45940 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_45950 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_45960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_45970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_45980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46030 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46060 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46070 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46080 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_46100 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46150 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_46160 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46240 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_46250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46280 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_46290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46510 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_46520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_46530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_46540 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_46550 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_46560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46620 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46630 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46720 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46770 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46780 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_46810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_46820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_46840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46860 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_46900 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_46910 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_46920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_46930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_46950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_46960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_46970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_47010 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_47090 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_47120 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_47130 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_47150 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47160 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_47180 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47190 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_47210 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47280 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47450 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47460 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47530 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_47540 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_47550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_47580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47690 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47810 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47900 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_47920 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47930 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47940 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47950 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47960 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_47970 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48000 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48010 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48020 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48030 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48060 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_48115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48150 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48160 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48190 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48200 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48210 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48240 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48280 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48300 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48340 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48440 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48530 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_48540 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48550 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48560 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_48570 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_48590 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_48600 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_48610 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_48620 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48630 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |

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| PA14_48640 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_48780 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48800 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48810 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48830 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_48840 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48850 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48880 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 1 | 0 | 0 | 0 |
| PA14_48890 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48940 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48950 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48960 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48970 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_48990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49030 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_49090 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49100 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49130 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49150 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49160 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49200 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49210 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49220 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49230 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49250 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49260 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49270 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49290 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_49310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_49320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49360 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49380 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49390 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49400 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_49410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 0 | 0 | 0 |
| PA14_49460 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 1 | 0 | 0 |
| PA14_49510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49520 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49530 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49540 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49610 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49660 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49710 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49720 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49730 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49750 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_49760 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_49810 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 1 | 1 | 0 |
| PA14_49860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49870 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49880 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49890 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_49900 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49910 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49930 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49940 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49960 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_49990 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50020 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50080 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50100 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50110 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50130 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50140 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50160 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50180 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50200 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50240 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50250 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50270 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50280 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50290 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50300 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |

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| PA14_50310 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50320 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50330 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50340 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50360 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50380 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50410 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50420 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50430 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50440 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50450 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50460 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50470 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50480 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_50500 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_50540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_50550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_50560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_50620 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_50790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50800 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_50820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_50850 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50870 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_50880 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_50890 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50900 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50910 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50930 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_50980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51020 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51040 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_51090 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51220 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51240 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51250 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51260 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51270 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51280 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51290 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51330 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_51340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_51350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_51360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_51380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_51390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_51410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_51420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_51430 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 1 | 0 | 0 | 0 | 1 | 0 |
| PA14_51450 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51510 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_51530 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_51550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51570 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51610 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51640 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51670 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51680 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51690 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51710 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_51720 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_51730 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51780 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51830 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_51850 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51860 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_51880 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_51920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51940 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51950 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_51960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52010 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_52040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_52050 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52060 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52070 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52080 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52090 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52110 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52120 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52130 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_52140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52150 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52290 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52310 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52330 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52340 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52350 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52370 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52380 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_52440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52465 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_52490 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_52500 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52510 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_52520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52570 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52800 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52810 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52820 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52840 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52850 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52870 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52880 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52890 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52900 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52910 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_52990 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_53010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_53070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_53110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53120 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53140 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_53180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53190 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_53220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_53230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_53250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_53270 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53380 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53400 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53410 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53430 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_53490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53500 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_53560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_53600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_53620 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53670 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53680 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53690 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53770 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53780 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53790 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_53830 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53840 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_53910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_53920 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_53940 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_53950 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_53970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_54040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_54080 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_54090 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54120 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 1 | 0 | 0 |
| PA14_54170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 1 | 1 | 1 |
| PA14_54210 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54220 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
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| PA14_54240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_54260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54290 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54300 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54320 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54330 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54340 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54350 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54390 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54400 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
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| PA14_54420 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
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| PA14_54520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
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| PA14_54630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_54640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_54660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_54730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54750 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_54830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54900 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54910 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54920 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54950 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54960 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_54980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55040 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55050 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55060 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55070 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55080 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_55090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_55100 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_55130 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55150 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55160 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55200 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_55220 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PA14_55240 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55250 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55280 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55390 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55400 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55430 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55460 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55480 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55490 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55610 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55640 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55650 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_55750 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_55760 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_55770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_55780 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_55790 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 1 | 0 | 1 | 1 | 1 | 0 |
| PA14_55810 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_55820 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_55840 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_55850 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_55860 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_55880 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_55890 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_55900 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_55920 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_55930 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 1 |
| PA14_55940 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_55960 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_55980 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_56000 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_56010 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_56030 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_56040 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_56050 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_56060 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56070 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56090 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 1 | 0 | 0 |
| PA14_56100 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56130 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_56160 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56170 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_56180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_56190 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56200 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_56300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_56390 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56430 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56470 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_56510 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_56540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_56560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56570 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_56620 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56640 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56660 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_56680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_56730 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_56780 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56800 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56810 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56830 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_56880 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56890 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_56920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_56930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_56990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_57010 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57020 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57030 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57040 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57050 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57060 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57210 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57275 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57490 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57500 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57520 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57530 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57540 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57560 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57570 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_57580 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_57590 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_57600 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57650 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_57690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57710 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_57720 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57830 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57870 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57890 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57900 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57910 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57930 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57940 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57950 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_57960 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_57990 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58000 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58030 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58050 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58060 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 1 | 0 | 0 | 0 |
| PA14_58120 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58130 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58150 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58300 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58320 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_58350 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_58360 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_58375 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58380 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58390 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_58410 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_58420 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 1 | 1 | 0 | 0 | 0 | 0 |
| PA14_58440 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_58450 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_58470 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_58490 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_58530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58550 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58650 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_58690 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58700 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 1 | 1 | 0 | 0 |
| PA14_58760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58890 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_58900 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58910 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58920 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58930 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58940 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58950 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58960 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58970 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58980 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_58990 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59000 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59010 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59020 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59030 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59050 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59060 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59070 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59090 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59100 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59110 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59120 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_59150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59170 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59200 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59210 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_59230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59370 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59380 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_59400 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_59410 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59430 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_59440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59470 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_59480 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59490 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_59510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59520 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59530 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59570 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59640 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59735 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_59780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_59790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_59820 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59840 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59850 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59930 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59960 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_59990 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60000 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60010 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60020 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60030 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60040 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60050 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60080 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60090 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60130 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_60140 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_60190 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_60200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60230 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |

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| PA14_60280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_60330 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60350 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60360 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60370 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60380 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60410 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60445 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60450 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_60460 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_60470 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 1 | 0 | 1 | 0 |
| PA14_60500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_60520 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_60530 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60540 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60600 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60630 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60650 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60660 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60670 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_60730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_60750 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_60760 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_60770 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_60780 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_60790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_60830 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60870 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_60890 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_60960 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_60970 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_61010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_61020 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61040 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61080 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 1 | 0 |

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| PA14_61140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61190 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 1 | 1 | 0 | 1 | 0 |
| PA14_61200 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 1 | 1 | 1 | 0 | 1 | 0 |
| PA14_61250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61280 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61290 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61300 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_61330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61380 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61390 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61440 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61450 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61460 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61480 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61500 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_61510 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61520 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 1 | 1 | 0 |
| PA14_61530 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 1 | 1 | 0 |
| PA14_61540 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_61550 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61580 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61590 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61600 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61660 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61670 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61680 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61700 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61710 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61720 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61740 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61750 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61790 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61820 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61840 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_61850 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61870 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_61910 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61920 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61940 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61950 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61960 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61980 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_61990 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62010 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_62100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62120 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62130 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62150 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62160 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62170 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62180 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62190 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62200 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62240 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_62250 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_62270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | indirect | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_62350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62380 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_62390 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62420 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62450 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62490 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62540 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_62560 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62570 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_62660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_62680 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_62690 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_62720 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62730 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62740 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_62760 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_62780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62810 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62830 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62840 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62850 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62860 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62910 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62920 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62930 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62940 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_62960 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | direct | 0 | 1 | 1 | 0 | 0 | 0 |
| PA14_62970 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_62990 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_63020 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63030 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_63120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_63170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_63210 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_63220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_63270 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_63290 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63340 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63350 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63360 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63370 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_63570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_63580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_63730 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63740 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63770 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63780 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_63800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
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| PA14_63840 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63850 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_63860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63890 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63900 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63910 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63920 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63940 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63960 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_63990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64010 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64030 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64050 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_64080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64200 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64220 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64230 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64260 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64270 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64290 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64300 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64310 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64320 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64335 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64350 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64360 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64370 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64390 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64410 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64460 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64470 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64480 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |

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| PA14_64490 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64510 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64520 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64530 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64650 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64660 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64670 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64680 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64740 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64780 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64790 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64860 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64900 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_64920 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_64940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_64950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_64990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65000 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65010 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_65050 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65060 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65080 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65090 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_65110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65130 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65150 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_65160 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_65170 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_65180 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_65200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65300 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65310 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65320 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65350 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_65370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65380 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65390 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65420 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65430 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65450 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65470 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65480 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65500 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65520 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65540 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65560 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_65590 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65920 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_65950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66120 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66270 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66290 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66320 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66330 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66340 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66380 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66400 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66410 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_66420 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_66460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66490 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66510 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66550 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_66560 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66580 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66600 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_66610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66620 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66630 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66640 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66650 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66660 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_66750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_66770 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_66790 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | direct | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_66800 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66820 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_66830 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_66840 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_66850 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_66875 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_66890 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_66990 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67010 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67030 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67040 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67050 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_67065 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67090 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67100 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_67230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_67240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67320 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_67340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67350 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67370 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_67380 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67400 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_67440 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67450 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67460 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67470 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67490 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67510 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_67540 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67560 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_67580 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_67600 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67630 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67670 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67680 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67710 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67720 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_67740 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67750 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67770 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67840 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67850 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67860 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67975 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_67990 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68000 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68040 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_68070 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_68080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_68090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_68110 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68120 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68130 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68140 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68170 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_68190 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_68200 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_68210 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_68260 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68300 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 1 | 0 | 1 | 0 | 0 | 0 |
| PA14_68330 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68340 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68350 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_68400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_68440 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_68450 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68460 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68580 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_68630 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68680 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68700 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68730 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68740 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68750 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68780 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68800 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68840 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_68850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_68860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_68890 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68900 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_68920 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68930 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 1 |
| PA14_68940 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 1 |
| PA14_68955 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_68980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69000 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69010 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69020 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69030 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69040 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 1 | 0 |
| PA14_69130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69150 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_69170 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_69200 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69220 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69230 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69240 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69250 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69260 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69270 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69380 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69390 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69430 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69470 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_69480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_69510 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69560 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69610 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69620 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69640 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69660 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69670 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69690 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69700 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69710 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69720 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69750 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_69760 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69770 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_69780 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69795 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69810 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69820 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69840 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69850 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69880 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69925 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_69980 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_69990 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_70010 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |

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| PA14_70040 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_70070 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70080 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70140 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_70160 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70170 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_70190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_70230 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70270 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70280 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70370 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70420 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70530 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70550 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_70670 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_70680 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_70690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_70710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_70740 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_70750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_70940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 1 | 1 | 0 |
| PA14_70950 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 1 | 1 | 0 |
| PA14_70970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 1 | 0 | 0 | 1 | 0 |
| PA14_70980 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA14_71000 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71070 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71090 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71100 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_71120 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_71250 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71260 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71280 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71420 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71430 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71560 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

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| PA14_71570 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71580 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_71590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_71620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_71630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 1 | 0 | 1 | 0 |
| PA14_71640 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71650 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_71720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 1 | 1 | 0 |
| PA14_71740 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_71750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71800 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71820 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 1 | 0 | 0 |
| PA14_71890 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_71900 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71910 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_71930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_71940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_71960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_71970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_72050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_72060 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72080 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_72210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72220 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72230 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_72260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA14_72300 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72360 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_72370 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_72380 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72390 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_72420 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72430 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72450 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_72520 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72620 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PA14_72630 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_72640 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72650 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72690 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72710 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72720 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72740 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72760 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72780 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72810 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72850 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72870 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72880 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72890 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72900 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | indirect | 0 | 0 | 1 | 0 | 0 | 0 |
| PA14_72960 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_72970 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73030 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73090 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_73100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_73110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_73120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA14_73140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | indirect | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_73170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 1 | 0 |
| PA14_73290 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73310 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73320 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73390 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA14_73410 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA1530.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA1555.1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | indirect | 1 | 0 | 0 | 0 | 1 | 0 |

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| PA1781.1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA1838-PA1839 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 1 | 0 |
| PA2750-PA2751 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA2852-PA2853 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA2958.1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 1 | 0 |
| PA3001-PA3002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA3305.1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 0 | 0 |
| PA3366.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA3621.1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA3964-PA3965 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA4270.1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA4406.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA4421.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 1 | 0 | 0 | 0 | 0 |
| PA4704.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA4726.1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 0 | 0 | 0 | 0 | 0 |
| PA4726.11 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | no | 0 | 1 | 0 | 0 | 0 | 0 |
| PA4726.2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | direct | 0 | 0 | 0 | 0 | 0 | 0 |
| PA4758.1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA5181.1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | indirect | 0 | 0 | 0 | 0 | 0 | 0 |
| PA5204-PA5205 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| PA5227.1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |

NA, no information available

**Tab. 5.5: Statistical analyses of the definition of primary sigma factor regulons.**

| Sigma factor | P value of the intersection | | |
|---|---|---|---|
| | ChIP-seq and RNA-seq | ChIP-seq and motif scan | RNA-seq and motif scan |
| AlgU | 0.0000 | 0.0000 | 0.0000 |
| FliA | 0.0000 | 0.9982 | 0.0226 |
| RpoH | 0.0000 | 0.0029 | 0.0095 |
| RpoN | 0.0000 | 0.0481 | 0.0279 |
| RpoS* | 0.0000 | 0.0000 | 0.0000 |
| PvdS | 0.0000 | 0.0000 | 0.0000 |
| SigX | 0.0000 | 0.4688 | 0.0001 |
| FpvI | 0.0004 | 0.0075 | 0.0383 |
| FecI | 0.0758 | 0.0000 | 0.0002 |
| FecI2 | 0.0067 | 0.0707 | 0.0010 |
| RpoD** | 0.0000 | 0.0000 | 0.0005 |

* RpoS ChIP-seq data were complemented with ChIP-chip data

** Three RpoD motifs were considered for genome-wide motif scan

**Tab. 5.6: Statistical analyses of over-represented PseudoCAP categories of primary sigma factor regulons.**

| Primary AlgU regulon | | | Primary SigX regulon | | |
|---|---|---|---|---|---|
| **PseudoCAP category** | **EF*** | **P value** | **PseudoCAP category** | **EF*** | **P value** |
| Cell division | 2.27 | 0.0150 | Secreted factors (toxins, enzymes, alginate) | 3.22 | 0.0000 |
| Secreted factors (toxins, enzymes, alginate) | 2.04 | 0.0043 | Protein secretion / Export apparatus | 2.56 | 0.0000 |
| Antibiotic resistance and susceptibility | 1.93 | 0.0136 | Translation, post-translational modification and degradation | 1.99 | 0.0001 |
| Cell wall / LPS / capsule | 1.81 | 0.0019 | Fatty acid and phospholipid metabolism | 1.71 | 0.0056 |
| Carbon compound catabolism | 1.42 | 0.0423 | Transcription, RNA processing and degradation | 1.53 | 0.0956 |
| Adaptation / Protection | 1.41 | 0.0522 | Energy metabolism | 1.50 | 0.0126 |
| Protein secretion / Export apparatus | 1.39 | 0.0749 | Chaperones / Heat shock proteins | 1.45 | 0.1296 |
| Fatty acid and phospholipid metabolism | 1.35 | 0.0810 | Motility / Attachment | 1.38 | 0.0965 |
| Two-component regulatory systems | 1.24 | 0.1710 | Biosynthesis of cofactors, prosthetic groups and carriers | 1.28 | 0.1228 |

**Primary FliA regulon**

| PseudoCAP category | EF* | P value |
|---|---|---|
| Chemotaxis | 7.80 | 0.0000 |
| Adaptation / Protection | 3.39 | 0.0000 |
| Motility / Attachment | 3.33 | 0.0000 |
| Secreted factors (toxins, enzymes, alginate) | 2.26 | 0.0012 |
| Related to phage, transposon or plasmid | 1.76 | 0.0254 |
| Cell wall / LPS / capsule | 1.46 | 0.0393 |
| Protein secretion / Export apparatus | 1.33 | 0.1039 |

**Primary RpoH regulon**

| PseudoCAP category | EF* | P value |
|---|---|---|
| Chaperones / Heat shock proteins | 4.85 | 0.0000 |
| Motility / Attachment | 2.45 | 0.0006 |
| Energy metabolism | 2.12 | 0.0001 |
| Adaptation / Protection | 1.72 | 0.0163 |
| Putative enzymes | 1.22 | 0.1075 |
| Antibiotic resistance and susceptibility | 1.21 | 0.2348 |

**Primary RpoN regulon**

| PseudoCAP category | EF* | P value |
|---|---|---|
| Motility / Attachment | 2.24 | 0.0000 |
| Chemotaxis | 2.14 | 0.0006 |
| Translation, post-translational modification and degradation | 1.76 | 0.0000 |
| Nucleotide biosynthesis and metabolism | 1.53 | 0.0232 |
| Non-coding RNA gene (sRNA) | 1.46 | 0.0981 |
| Central intermediary metabolism | 1.39 | 0.0329 |
| Antibiotic resistance and susceptibility | 1.29 | 0.1233 |
| Protein secretion / Export apparatus | 1.29 | 0.0677 |
| Transcription, RNA processing and degradation | 1.28 | 0.1526 |
| Cell wall / LPS / capsule | 1.26 | 0.0712 |

**Primary RpoS regulon**

| PseudoCAP category | EF* | P value |
|---|---|---|
| Chemotaxis | 3.03 | 0.0004 |
| Motility / Attachment | 2.49 | 0.0001 |
| Two-component regulatory systems | 1.92 | 0.0049 |
| Protein secretion / Export apparatus | 1.83 | 0.0064 |
| Adaptation / Protection | 1.65 | 0.0146 |
| Energy metabolism | 1.48 | 0.0249 |
| DNA replication, recombination, modification and repair | 1.24 | 0.1972 |

**Primary PvdS regulon**

| PseudoCAP category | EF* | P value |
|---|---|---|
| Adaptation / Protection | 5.10 | 0.0000 |
| Secreted factors (toxins, enzymes, alginate) | 3.40 | 0.0034 |
| Protein secretion / Export apparatus | 2.80 | 0.0034 |
| Energy metabolism | 1.41 | 0.1336 |
| Biosynthesis of cofactors, prosthetic groups and carriers | 1.35 | 0.1758 |
| Putative enzymes | 1.23 | 0.1775 |

**Primary RpoD regulon**

| PseudoCAP category | EF* | P value |
|---|---|---|
| Chaperones / Heat shock proteins | 1.81 | 0.0048 |
| Protein secretion / Export apparatus | 1.63 | 0.0003 |
| Related to phage, transposon or plasmid | 1.58 | 0.0079 |
| Amino acid biosynthesis and metabolism | 1.33 | 0.0070 |
| Translation, post-translational modification and degradation | 1.26 | 0.0314 |
| Secreted factors (toxins, enzymes, alginate) | 1.26 | 0.1076 |
| Cell wall / LPS / capsule | 1.20 | 0.0941 |

**Tab. 5.7: Statistical analyses of the connectivity of transcription factor and sigma factor regulons.**

| Sigma factor-specific genes in the adaptive transcriptome (769) | Parameter | Transcription factor (genes assigned to primary sigma factor regulome) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Anr (94) | CbrB (184) | FleQ (146) | GacA (85) | LasR (482) | RhlR (71) |
| AlgU (144) | Genes | 15 | 24 | 7 | 9 | 81 | 1 |
| | enrichment factor | 0.77 | 0.73 | 0.18 | 0.42 | 0.74 | 0.06 |
| | P value | 0.7184 | 0.9864 | 1.0000 | 0.9756 | 0.9521 | 1.0000 |
| FliA (63) | Genes | 7 | 7 | 60 | 8 | 51 | 14 |
| | enrichment factor | 0.82 | 0.49 | 3.44 | 0.86 | 1.07 | 1.90 |
| | P value | 0.5150 | 0.9933 | 0.0000 | 0.2511 | 0.0003 | 0.0002 |
| RpoH (50) | Genes | 6 | 11 | 17 | 8 | 47 | 16 |
| | enrichment factor | 0.89 | 0.96 | 1.23 | 1.08 | 1.24 | 2.73 |
| | P value | 0.4125 | 0.5529 | 0.0026 | 0.0882 | 0.0000 | 0.0000 |
| RpoN (224) | Genes | 32 | 65 | 76 | 30 | 164 | 11 |
| | enrichment factor | 1.06 | 1.27 | 1.22 | 0.90 | 0.96 | 0.42 |
| | P value | 0.1085 | 0.0142 | 0.0000 | 0.0749 | 0.0000 | 0.9957 |
| RpoS (117) | Genes | 6 | 16 | 31 | 29 | 145 | 8 |
| | enrichment factor | 0.38 | 0.60 | 0.96 | 1.67 | 1.63 | 0.58 |
| | P value | 0.9949 | 0.9976 | 0.0105 | 0.0000 | 0.0000 | 0.7841 |
| PvdS (16) | Genes | 1 | 4 | 1 | 4 | 9 | 4 |
| | enrichment factor | 0.46 | 1.09 | 0.23 | 1.69 | 0.74 | 2.14 |
| | P value | 0.6017 | 0.3305 | 0.8393 | 0.0240 | 0.6159 | 0.0114 |
| SigX (145) | Genes | 33 | 43 | 20 | 23 | 85 | 36 |
| | enrichment factor | 1.68 | 1.30 | 0.50 | 1.07 | 0.77 | 2.12 |
| | P value | 0.0000 | 0.0303 | 0.9538 | 0.0168 | 0.8476 | 0.0000 |
| FpvI (1) | Genes | 0 | 0 | 0 | 0 | 0 | 0 |
| | enrichment factor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | P value | 0.1222 | 0.2393 | 0.1899 | 0.1105 | 0.6268 | 0.0923 |
| FecI (3) | Genes | 3 | 5 | 0 | 0 | 1 | 0 |
| | enrichment factor | 7.39 | 7.28 | 0.00 | 0.00 | 0.44 | 0.00 |
| | P value | 0.0000 | 0.0000 | 0.4688 | 0.2966 | 0.6863 | 0.2525 |
| FecI2 (6) | Genes | 1 | 1 | 1 | 3 | 1 | 0 |
| | enrichment factor | 1.23 | 0.73 | 0.60 | 3.37 | 0.22 | 0.00 |
| | P value | 0.1599 | 0.4407 | 0.3196 | 0.0018 | 0.9706 | 0.4419 |

**Tab. 5.8: Bioluminescence assay data.**

| Strain | Normalized bioluminescence (RLU/OD$_{600}$) | | | P value |
|---|---|---|---|---|
| | Assay 1 | Assay 2 | Assay 3 | |
| PA14Δ*algU*(pBBR1-MCS5-TT-RBS-P*algU-lux*) | 77846 | 78839 | 83823 | 0.0208 |
| PA14(pBBR1-MCS5-TT-RBS-P*algU-lux*) | 986605 | 749833 | 633226 | |
| PA14Δ*fliA*(pBBR1-MCS5-TT-RBS-P*fliC-lux*) | 131443 | 108894 | 127983 | 0.0000 |
| PA14(pBBR1-MCS5-TT-RBS-P*fliC-lux*) | 1934720 | 1972022 | 1958041 | |
| PA14Δ*rpoN*(pBBR1-MCS5-TT-RBS-P*flhA-lux*) LB | 190670 | 144586 | 110611 | 0.0009 |
| PA14(pBBR1-MCS5-TT-RBS-P*flhA-lux*) LB | 497570 | 489160 | 586399 | |
| PA14Δ*rpoS*(pBBR1-MCS5-TT-RBS-P*cheY2-lux*) | 36238 | 32811 | 33055 | 0.0008 |
| PA14(pBBR1-MCS5-TT-RBS-P*cheY2-lux*) | 223978 | 232432 | 246236 | |
| PA14Δ*sigX*(pBBR1-MCS5-TT-RBS-*PaccB-lux)* | 74915 | 108354 | 56232 | 0.0036 |
| PA14(pBBR1-MCS5-TT-RBS-P*accB-lux*) | 2375254 | 2912930 | 2568342 | |
| PA14(pBBR1-MCS5-TT-RBS-*lux*) 28°C | 15942 | 14618 | 13505 | 0.0024 |
| PA14(pBBR1-MCS5-TT-RBS-P*grpE-lux*) 42°C | 271959 | 317277 | 310820 | |
| PA14(pBBR1-MCS5-TT-RBS-*lux*) 2,2' Bipyridyl | 143635 | 159154 | 109559 | 0.0047 |
| PA14(pBBR1-MCS5-TT-RBS-P*pvdS-lux*) 2,2' Bipyridyl | 1423123 | 1127751 | 1326851 | |
| PA14(pBBR1-MCS5-TT-RBS-P*pvdS-lux*) 2,2' Bipyridyl 0 min | 230899 | 307452 | 368138 | 0.0026 |
| PA14(pBBR1-MCS5-TT-RBS-P*pvdS-lux*) 2,2' Bipyridyl 70 min | 1423123 | 1127751 | 1326851 | |

RLU, relative light units; OD$_{600}$, optical density at the wavelength of 600 nm.

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